This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

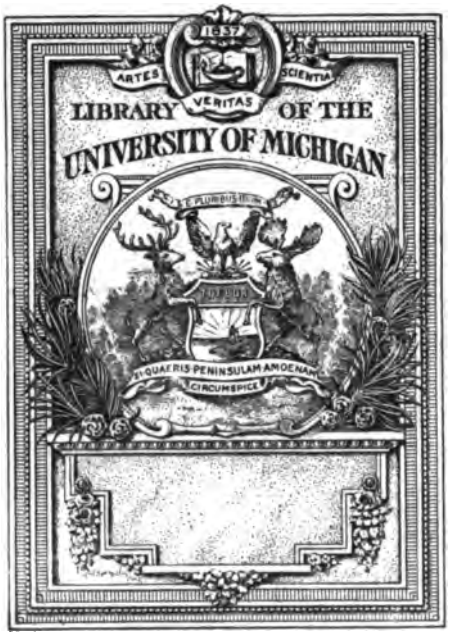
+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

B 807,413


ARTES
SCIENTIA
VERITAS
LIBRARY OF THE
UNIVERSITY OF MICHIGAN
SI QUAERIS PENINSULAM AMOENAM
CIRCUMSPICE

T
1
.T25

THE

TECHNOLOGY REVIEW

VOLUME X.

1908

Committee on Publication

JAMES PHINNEY MONROE, '82
WALTER BRADLEE SNOW, '82
ARTHUR AMOS NOYES, '86
WALTER HUMPHREYS, '97
ISAAC WHITE LITCHFIELD, '85

BOSTON
PUBLISHED BY THE ASSOCIATION OF CLASS SECRETARIES
OF THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

1735

COPYRIGHT, 1908
BY THE
ASSOCIATION OF CLASS SECRETARIES

GEO. H. ELLIS CO., PRINTERS, 272 CONGRESS ST., BOSTON

"THE LYDIA"

Technology Expedition to the Aleutian Islands

The Technology Review

Vol. X. JANUARY, 1908 No. 1

JOURNAL OF THE TECHNOLOGY EXPEDITION TO THE ALEUTIAN ISLANDS, 1907

By T. A. Jaggar, Jr.,
In Charge of the Expedition

April 13, 1907.—On this date the writer left Boston for San Francisco, arriving Thursday morning, April 18. On the 20th of April he left for Seattle by the Shasta route, arriving there April 22. During the following month the various members of the scientific party convened in Seattle at the Hotel Lincoln, where headquarters were established. After an examination of all the shipping in or near Seattle for a fortnight, I bought the schooner "Lydia," 39 tons gross, 37 tons net, 62.6 feet long, 20-feet beam, 7.0 feet deep. The "Lydia" was built by Matthew Turner at Benicia in California in 1889 for the sea-otter trade on the coast of Alaska, and she was first used in that service near Kodiak. Carl Guntert, from whom the vessel was bought for the Technology Expedition, agreed to serve as sailing master for the voyage. Mr. Guntert shipped on April 29 and engaged sailors; but within a week he announced his determination not to go with the expedition, and it became necessary to prolong a delay already too great, owing to alterations, repairs, and preparations, and to set about a systematic search for a captain. Thanks to the kind assistance of Captain Rhodes, of the Coast and Geodetic Survey, the services of Captain George Seeley, of Seattle, were finally secured, and, as the event proved, no better officer could have been found. The success of the voyage was largely due to his careful navigation and thorough knowledge of seacraft, no less than to his wise selection of a competent crew and an efficient mate.

The "Lydia" was unprovided with auxiliary power, and it was not found

189553

possible to buy or charter a satisfactory auxiliary schooner suitable to the purpose of a cruise in the Aleutian Islands. The schooners used in Puget Sound and on the inside passage to southeastern Alaska are commonly converted into power boats, and are no longer seaworthy sailing craft for ocean voyages. Accordingly, after it was decided that the expedition should trust mainly to a sailing-vessel, it seemed best to carry on deck a launch, equipped with as powerful an engine as possible. For this purpose a 23-foot life-boat was bought, a 7 horse-power standard engine was installed in this boat, and cradles were built to hold the launch on the forward port deck of the "Lydia." This launch proved serviceable in the harbors and bays of the islands for purposes of local exploration. The throat-halyards of the fore and main rigging were used to float and ship the launch. She proved unwieldy for rapid handling, the engine being somewhat too heavy for the hull in which it was set up. This condition subjected the launch to undue strain while she was being lifted over the bulwarks, and made it impossible to use her in many places where a lighter boat could be put overboard with facility. The "Lydia" was equipped with two fisherman's dories, and, on the whole, these are the most seaworthy and reliable tenders a sailing craft can have in Alaskan waters.

The weeks spent in Seattle were actively employed in collecting stores, instruments, charts, books, fishing-tackle, ammunition, ship chandlery, fuel, bedding, clothing, tools, camp kit, articles for trade, and the multifarious impedimenta of a long voyage. The delay became so long and the voyage by sailing-vessel promised to be so slow with the prevailing head-winds that I decided we could not hope to go north by the coast route, but would have to head straight across the North Pacific westward to Unimak Pass, making that the starting-point for scientific work among the islands. The original plan contemplated heading from Unalaska westward on the north side of the Aleutian chain to Attu, and making that extreme western island of the American possessions the starting-point of a cruise eastward through the islands, with the prevailing west wind then favorable. This might have been accomplished if the start from Seattle could have been made early in April; but the late start defeated this plan, and made it necessary to begin work as soon as the islands were reached, and cruise slowly westward.

The original scientific party consisted of myself, geologist; Professor H. V. Gummere, of the Drexel Institute, Philadelphia, magnetician and astronomer; Professor A. S. Eakle, of the University of California, mineralogist; Dr. Edwin C. Van Dyke, of San Francisco, physician, entomol-

CAPTAIN GEORGE SEELEY, SAILING MASTER OF THE "LYDIA"

THE SCIENTIFIC PARTY

JAGGAR GUMMERE VAN DYKE EAKLE
SWEENY MYERS

ogist, and botanical collector; Mr. Desaix B. Myers, of Philadelphia, and Mr. H. P. Sweeny, of Stroudsburg, Penn., of the class of 1908, M. I. T., assistants in geology and mineralogy. The party in Seattle was joined by Mr. Francis T. Colby, of Boston, accompanied by Mr. John Cody, a Canadian trapper and woodsman. Mr. Colby was interested in the larger mammals of Alaska, and with Cody he accompanied the expedition as far as Unalaska. The two then proceeded to the peninsula in search of big game, and Mr. Colby afterwards sent in some valuable notes on occurrences of coal on the Alaskan Peninsula and other observations of interest. Mr. Cody, on the voyage north, proved of the greatest service to the expedition, as he was by trade a carpenter, and he built many fixtures for the schooner and launch which were useful throughout the voyage. All the members of the party worked vigorously during the days of preparation in Seattle, and I take this opportunity of expressing my gratitude to one and all for their painstaking labors during many trying days of vexatious disappointment and delay.

The "Lydia" was at length fitted for sea. Thanks to the prompt work of Mr. Hibbs, naval constructor of the Moran Shipbuilding Company, a new galley and toilet were built on deck forward of the after-cabin; extra berths were built into the port side of the hold abaft the mainmast and in the forehold for the extra members of the scientific party and for the ship's officers respectively. The after-berths were connected by an open doorway with the cabin. On the opposite (starboard) side of the vessel a room was partitioned off to hold cabin luggage and camp kit. Eight berths were provided in the cabin, three in the forehold, a berth was built in the galley for the cook, and the forecastle accommodated the four seamen. The ship's company numbered fifteen at the start,—captain, mate, cook, four seamen, and eight of the scientific party. Twice during the two weeks preceding the start there were desertions on the part of members of the crew, the last desertion being on Sunday night, May 19, the very eve of departure. The "Lydia" sailed under a yacht's license.

Monday, May 20.—At 4.24 P.M. Captain Seeley cast off from the buoy in Seattle Harbor, and for a mile the vessel was towed by a gasoline launch until clear of the shipping. Then we made sail, flying the ensign over the M. I. T. pennant. The wind fell to a dead calm in the night.

May 21.—The ship lay off Ballard in the morning, not far from the city. With light head-winds she tacked to Port Townsend and rounded the point separating the inner sound from Juan de Fuca Strait. In the night we lay off Protection Island.

May 22.—With a glassy calm in the morning no progress whatever was made. The sea life was swarming,—medusæ, large and small, tunicates, fish, birds, and porpoises. The water was warm, and several members of the party went in swimming. A brisk westerly wind sprang up about 4 P.M., and in a very short time the "Lydia" was pounding into a choppy sea off Race Rocks, with her rigging dangerously loose. This test, before going to sea, proved a valuable one, as it gave us a chance to put in and overhaul the ship before making the open ocean.

May 23.—We made harbor at Port Angeles and went ashore. The extra mainsail was shipped back to Seattle by packet, to be altered to fit the ship, and an order was sent for a shipment of cordage and blocks necessary for repairs and renovation of weak rigging. Messrs. Colby and Cody went into the mountains to the south-west for a short trip.

May 24.—An extra able seaman, to make up our complement of four, arrived from the sailors' union in Seattle. I decided, in view of the prospect of a week's further delay at Port Angeles, to take the scientific party ashore and make an experimental camping trip, in order to try out the light tents and knapsacks and find out what would be needed and what would be superfluous in the barren grassy wastes of the Aleutian Islands. About 4 P.M. the party went ashore to the east of Port Angeles in a dory. We landed at the mouth of Morse's Creek and pitched camp amid gigantic Douglas firs on the ranch of Mr. Hemme, who received us hospitably. The camp ground was on green grass by a cold stream, with a fine view of the snowy Olympic Range up a valley to the south. Tyee salmon were running in the stream. The wind blew strong from the west. The party consisted of Gummere, Eakle, Van Dyke, Myers, Sweeny, and the writer. We used a Sibley tepee tent of paraffined silk, and each man carried a *Rücksack* with a share of the provisions. The latter were distributed in small duck sacks, and carefully weighed on a basis of rations for a specified time. The food supplies of the expedition were of two types, those requiring cookery and those which could be eaten without heating. Among the former were the usual staples,—flour, rice, tea, coffee, cereals, bacon, evaporated eggs, evaporated fruit and evaporated potatoes: among the latter the chief were California figs, "force," "grape-nuts," dried (chipped) beef, boiled ham, hardtack, seeded raisins, evaporated cream, cheese, butter in tins, tinned meats, sardines, and marmalade. The cooking devices were also of two kinds,—the "Primus" oil stove for cooking in tents where firewood is wanting, and a sheet-iron folding box stove for either tent or the open where firewood (usually drift logs) was available. The

"Primus" was found invaluable, both for warmth and cooking, in the raw climate and woodless lands of the Aleutians. The camping equipment was supplied by Abercrombie & Fitch, of New York.

Saturday, May 25.—We left the tent as our main camp and took light packs for a march into the timber up Morse's Creek. The windfalls of enormous trunks made the travelling extremely arduous and slow. On a deserted ranch three or four miles up the valley, known as "Spencer's," we made an impromptu open-air camp without shelter. In the stream bed appeared outcrops of upright or slightly contorted shales striking E.N.E. The night was cold. No cooking except tea was attempted on this trip, and the various forms of ready cooked food were found palatable and satisfying.

May 26.—We discovered a trail which led out from this ranch in the woods to the westward, and at about the distance of a mile came into a highway leading southward towards the Olympic Range. We cached our packs by this road, and then tramped southward into the mountainous foothills, reaching an elevation of 1,200 feet above sea-level. The timber is heavy over the whole country, with some cleared farm lands near the roads. The mountain ranches appear prosperous and well kept. We walked six and a half miles, lost Dr. Van Dyke at the luncheon hour, he having been diverted from our route by the allurements of beetles. He returned to us, however, in good season, on the West Fork of Morse's Creek, where we rested in a valley, looking up at near snowy mountain peaks. We returned by the road northward to the tent at sea-level. The weather was hot.

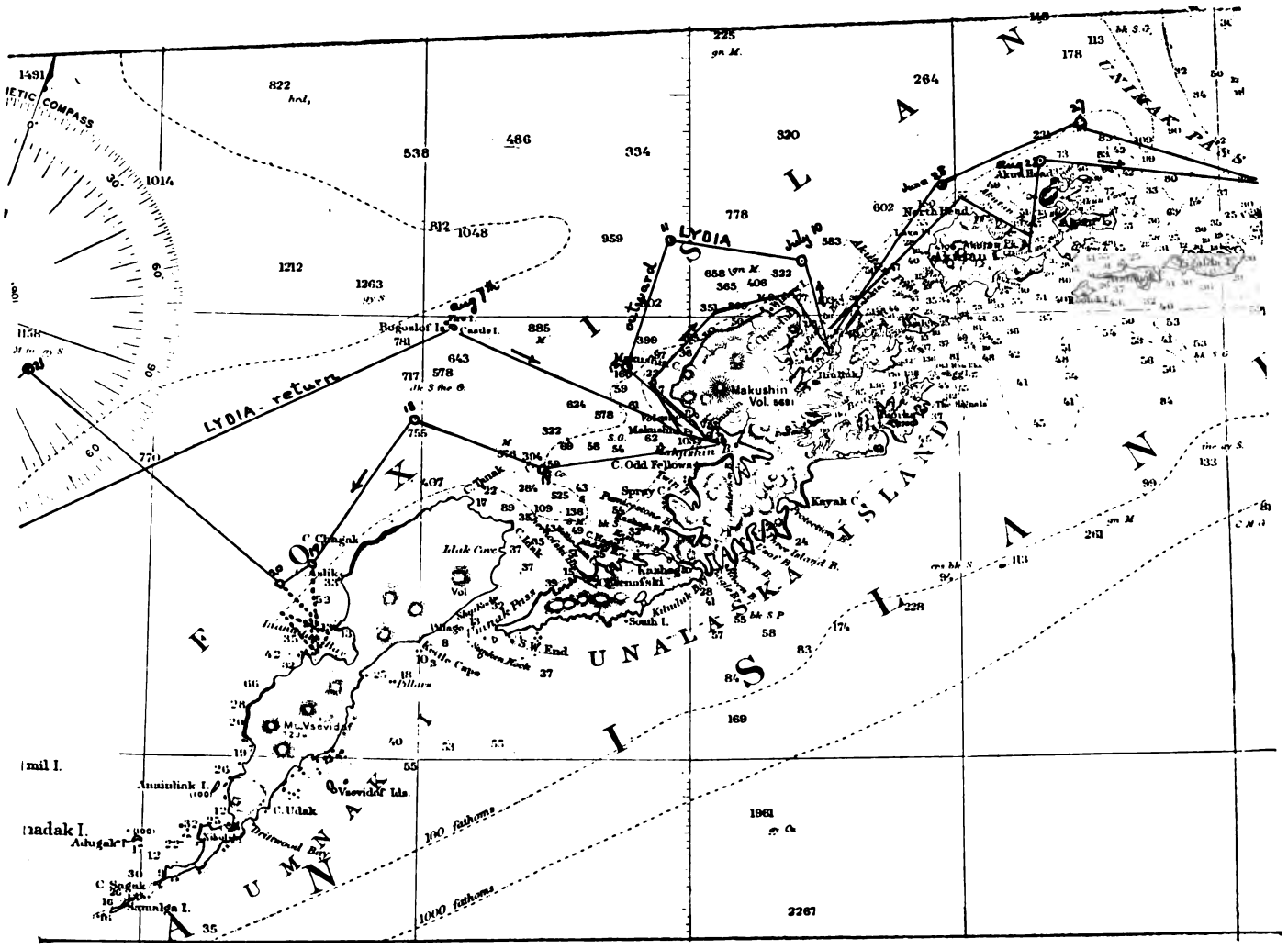
May 27.—The wind blew hard from the north, making the long pull by dory back to the schooner too severe a task to attempt. The party remained in the vicinity of the camp, practising salmon-spearing with a huge five-pronged spear belonging to our landlord, and doing some trout-fishing. The trout were small. The dory was moved to a more convenient location near the camp, in order to be ready for an early start. Some members of the party did a little target practice, in order to adjust the sights on rifles.

May 28.—The party broke camp early and shipped the outfit on the dory. Myers and Jaggar rowed the latter back to the "Lydia," the others walking west along the beach to Port Angeles. At the ship it was found that Cody and Colby had returned on Sunday, and Mr. Colby had driven a nail into the sole of his foot. From this injury, however, he promptly recovered. The work of renovating the schooner was finished, and at noon the refitted

mainsail arrived at Port Angeles by the packet. After a trip ashore to take off the pedestrians, the captain set sail, and at 4.30 P.M., with a westerly head-wind, the "Lydia" beat out into the strait and started on her long voyage. There was some sea and some *mal-de-mer*, but during the night the wind failed.

May 29 to June 26.—The long voyage west was uneventful. The bobstay carried away twice, and head-winds prevailed. The vessel was unceasingly followed by a barnyard of "goonies," black albatrosses. Their aëroplane evolutions and squabbles over refuse from the ship were an endless source of amusement. On June 6 a giant kelp was picked up, like a big whip 43 feet long. It was covered with goose barnacles, worm-like crustaceans, and algæ. The "Lydia" proved tight in heavy weather. On Sundays service was held in the cabin at 10 A.M., the officer of the deck usually attending. Whales and porpoises were seen from time to time, and one fur seal appeared, far out in the Pacific. On June 14 the "Lydia" made 162 knots in twenty-four hours, with a south wind. This was the only fast time, however. On the 15th Mr. Frank Seeley, the mate, had a narrow escape on the after-end of the main boom. He was standing on the foot-rope, which parted, and he caught himself with his arm around the boom. The first ship sighted was on June 17, off Kodiak. On June 22 a hard blow from the north made it necessary to eat meals off the floor. The ship was heeled well over. In an effort to manage a cup of tea and a plate of dinner on the windward, or upslope, locker, I lost my grip, slid across the cabin into the dishes, wrecked my plate, and poured the cup of tea down my neck. This was a common diversion. The occupations of the scientific party during the voyage were various,—overhauling outfit, preparing food in sacks for the land trips, reading, writing letters home, and painting various articles in need of paint. The captain is an artist, and in his "cabin" in the forehold has a picture of the "Lydia" painted on the forward bulkhead. Above are the words "God bless our Home," and underneath "No cussin aloud." The last is an adaptation from one of the "regulations" promulgated before the ship left port.

June 27.—At 5 A.M. the island Tigalda was sighted after twenty-nine and one-half days at sea. The day opened fine, but the wind fell. On the banks south of Unimak Pass the cook caught two big codfish. There are many gulls, puffins, and brown "whale birds" about; and one small seal, probably a fur seal, was seen. At 1 P.M. a strong north-west wind sprang up, and the "Lydia" tacked up against it into the broad Unimak Pass between Ugámak and the snow-clad heights of Pogromnoi Volcano



MAP OF UNALASKA AND ADJACENT ISLANDS

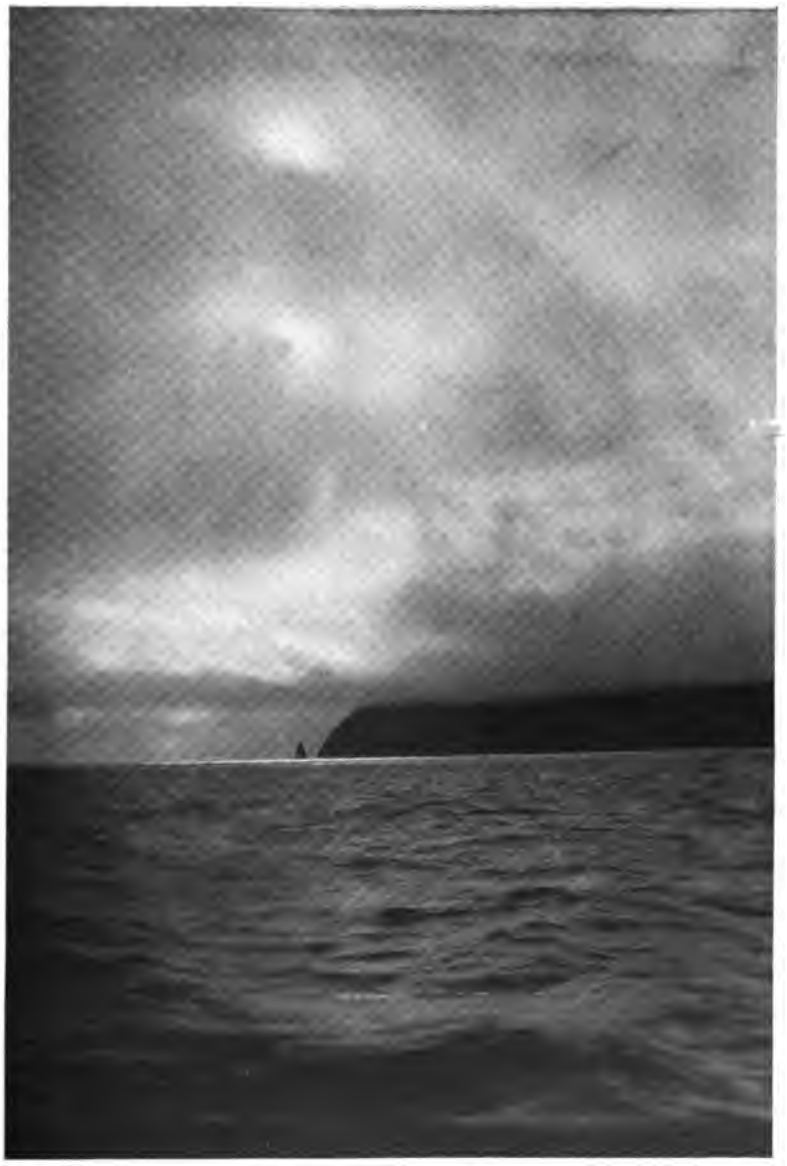
on Unimak Island. Pogromnoi is a conical peak rising from a long flat dome which looks like one of the flat lava heaps of the Sandwich Islands. Coming out of Akutan Pass to the south, a full-rigged ship was seen. At five o'clock in the evening, fog settled into the pass and continued all night. The wind fell. Before entering the fog, we saw the light-house settlement on the east side of the pass, and obtained photographs and sketches of all of the islands in sight, six or eight in number. They are bold and grass-clad, not a tree in sight. Steep cliffs rise from the waves, and the profiles show either cones or saw-teeth. The higher cones are snowy on Unimak, Akun, and Akutan.

June 28.—The morning found us off the north side of Akun Island. At 10 A.M. the fog cleared under a north-east wind. Whales, guillemots, and puffins are about. Akutan to the S.S.E. is in an interesting stage of volcanic activity. Both Akun and Akutan possess very recent steep cones. On the north side of Akun the crater has apparently been breached by the sea. Akutan has two recent volcanoes, a high snowy one and a lower active one nearer the shore. This latter is throwing up columns of black factory "smoke,"—steam charged with dust. The crater opens toward a gulch on the north, and the fissure whence the explosions rise is east of the head of the gulch. At the back inner wall of the half-open bowl, as one sees it from the sea, there appears to be a great black cavern under the snowy crest of the mountain. The mountain rises perhaps three thousand feet above the sea. On the slopes and in the gulch descending from the crater there is much snow, soiled with new-fallen volcanic dust. The "cauliflower" clouds of black dust which rise from time to time have all the characteristic hard vortical convolutions of what Kennan called the "mud smoke" of Mont Pelée in Martinique. The lower snow limit is about the 1,000-foot level in Akutan. On the point of a spur two benches cut in hard rock appear in profile against Akutan Pass, and these suggest recent elevation of surf-worn benches. The same thing was noted, on first sighting the islands, on the south side of Tigalda. This is an earthquake belt, and by gradual slips the islands are probably rising under stress.

The evening of this day will long be remembered by every member of the party. Across a glassy calm on Bering Sea the sun's disc set glowing red, with a singular symmetrical deformation by atmospheric layers that made it appear like a lamp with annular swellings. Far ahead to the west the snowy dome of Makushin, cold and arctic-looking, was all that could be seen of Unalaska, otherwise "hull down," as the mariners say. But, on

looking back to the east, the snowy heights of Unimak, fifty, eighty, and a hundred miles away, glowed pink in the evening light, and for the first time we saw—Shishaldin. For two days we had been looking for this famous volcanic peak, rising, like Fuji, a pure snow cone 9,000 feet from the sea! Some one distinguished a salmon-colored cloud in the background of Pogromnoi. Still farther back the sky was purplish blue-black, and this background revealed to our wondering eyes the fact that this cloud was a sharp-pointed, delicate cone, clear, perfect, and dominating even the nearer peaks, though its base vanished into an opalescent haze. Between eighty and ninety miles away, still it rose supreme, like a great white throne tinged with the sunset light.

Saturday, June 29.—During the night a south-east gale began to blow, giving us a preliminary good sample of the sudden changes of Aleutian weather. It is a land—or a sea—where never twenty-four hours go by without rain. The wind blew the "Lydia" forward on her course, but right across the tide-rips of Akutan Pass, and the night was a strenuous one of pounding, rolling, and great swashes of salt water across the deck. At four A.M. I came on deck and found the fog clouds just rising enough to show deep fjords and rocky headlands with waterfalls tumbling over cliffs into the sea. At first we mistook a deep bay beyond Cape Cheerful for Unalaska Bay, but the captain quickly recognized his landmarks as the clouds rose higher. The vessel was brought up into the wind, and we stood off towards Priest Rock. This is a sentinel at the eastern entrance to Unalaska Bay, looking quite like a robed priest with his face to the north. All of the Aleutian headlands are likely to show these isolated rocks in the water at the end of the spurs. They mark places where marine erosion has attacked the points from two sides, opposed coves have met, and a rocky outlier results. The sun burst through the low-lying clouds, making wonderful lambent trails and light-bursts on the white-capped waters as the little ship tacked back and forth swiftly until she came to rest in the deep arm of the bay which separates Amaknak Island from the Unalaska mainland. Ahead was seen the long line of houses on the strand,—Unalaska or Iliuliuk Village,—while on the right, in a cove of Amaknak Island, behind a sand spit, could be seen the flag and wharf of the North American Commercial Company's station at Dutch Harbor. We came to anchor, got the launch over the side, and then towed the schooner up to the wharf. At about 10 A.M. all was snug, and once more we felt firm land under foot. Professor Gummere, assisted by Mr. Sweeny, at once set off with his magnetic instruments to set up on the station which had been occupied by



PRIEST ROCK, UNALASKA BAY

UNALASKA VILLAGE

ATKA WOMAN WEAVING BASKETRY BELT

former observers. We found some mail at the post-office. I made the acquaintance of Captain Rogers, of the revenue cutter "McCulloch"; of Captain Applegate, formerly United States Signal Service recorder, and now a resident fur trader of Unalaska; and of Messrs. Harman and Gray, respectively United States marshal and Alaska Commercial Company's agent. The coastwise packet "Dora" lay at the wharf when we arrived, and left in the evening for the north side of the Alaskan Peninsula. Messrs. Colby and Cody decided to leave the main party and proceed to the peninsula via the "Dora," and they accordingly transferred their equipment to her deck and bade farewell to the "Lydia" and their cabin companions. They later reached Herendeen Bay, crossed the peninsula, and had many adventures in the vicinity of Seldovia and the Kenai.

June 30.—Professor Gummere has discovered that in some unexplained way one of the pivots of an important magnetic needle belonging to the dip circle is broken. This will seriously hamper his work. Dr. Eakle and Mr. Myers to-day visited the "Unalaska Gold Mine," an abandoned prospect hole and small stamp mill on Captain's Bay, the inner arm of Unalaska Bay, south of Unalaska Village. Captain Seeley and I dined with Mr. Schroter, manager of the North American Commercial Company, and much of the day was given to cleaning up, reading, and writing letters, and completing preparations for a start towards Makushin Mountain overland to-morrow. In the evening, accompanied by Gummere and Sweeny, I climbed the mountain north of Dutch Harbor, some 2,000 feet high, and obtained a superb view of the great fjord, Broad Bay, on the western side where we plan to start inland, and the snow-clad Makushin and other lower volcanic cones which make the highlands of northern Unalaska. Beneath our feet was a wonderful carpet of fragrant, long-stemmed flowers and grasses, lupines, anemones, orchids, marguerites, and many others in profusion. There are no trees except a small clump of spruces planted by the Russians about 1840. These are flourishing, and show that trees would grow on the islands if once they were given a start. In the bottom-lands there are some willows: these are practically the only shrubs.

Monday, July 1.—The morning was spent by all hands in preparing *Rücksacks* and camp material. The food was carefully weighed, tents and kit apportioned equally, so that each man should carry about forty pounds. Each man had a sleeping-bag, the Kenwood, Johnson, eider-down, and fur bags claiming each its champion. Captain Seeley beached the schooner at the head of the wharf, and will repair the bobstay and otherwise overhaul and repair defects discovered during the voyage north. At 4 P.M. the party

embarked in the launch, manned by Mr. Seeley and Fred Schwartzlose, the German sailor (the other sailors are Scandinavians). A dory is always towed after the launch on such occasions, so that the latter may be anchored and a landing made easily on any beach. It is possible to safely beach the launch, but not in a seaway or on shoals. At Unalaska the services of Garman Stepetan, a full-blooded Aleut, were secured as guide. Two hours' run took us through the strait between Amaknak Island and Unalaska and then across the greater fjord to Broad Bay, where a landing was made. The dory was kept and the launch sent back. Packs were at once strapped in place, and the march began, Garman leading the way past a deserted sod house (*Bara-bara*), and then across miles of wet marsh. A stream called Glacier River occupies the valley we were ascending. The hummocky grass made walking very laborious, and we learned from this experience never thereafter to start inland without high-topped rubber boots. Ahead of us loomed the mighty, snow-clad dome of Makushin Mountain, like an Alaskan Jungfrau. So late was the start made that it soon became necessary to camp on a grassy terrace at the side of the valley. Tents were quickly pitched, and the "Primus" stove was soon sending up a savory odor of bacon and flapjacks. In the night it rained, as usual.

July 2.—The morning was rainy. We cached a tent and reduced our loads, and pushed on up the wet valley bottom. On a terrace near a point where the valley narrows down to a box canyon a second camp was made. Here some former prospectors had left heaps of bituminous coal carried thither in sacks. In the rain and fog the coal fire was very welcome. Dr. Van Dyke is an indefatigable collector of insects, and the minute we dropped our pack, he was off, whacking the bushes, overturning big stones, and plying his forceps and little glass phials. The Glacier River is 70 yards wide in places, and, where it emerges from the canyon above, there are on its bank two pronounced gravel terraces, one above the other, sloping gently from a greatest height at the mouth of the canyon to the level of the flood-plain a third of a mile and a mile down the valley. These appear to be the product of some former flood, perhaps of volcanic origin, whereby a great volume of débris was deposited in a long, flat fan-cone at the mouth of the canyon, and this has since been trenched in two stages by the stream. On the sides of the valley, which is three-quarters of a mile wide, mountain walls rise with steep 40-degree slopes. The lateral gorges have deposited fan-cones at their mouths. A flat plateau, 1,000 feet above the valley, ramifies into the intramontane higher valleys as an old terrace level of doubt-

ful significance. It may be an old baselevelled surface. The snow on the mountains is patchy except where the glaciers cover Makushin. In the stream gravels the rocks are mostly basaltic, with some fine dark slaty rocks and crystalline pebbles of the appearance of diorite.

July 3.—All turned out at 3 A.M., Eakle and Myers to explore the northern volcanoes, Jaggar, Gummere, Sweeny, and Garman to climb Makushin, and Dr. Van Dyke to accompany the Makushin party to the snow line, there to branch off and collect plants and insects. Fog clouds lowered over the valley; but the heights above proved clear, and the day turned out a favorable one. The way up Makushin led first up the steep valley wall by a zigzag path to the thousand-foot level, then across the upland, which shows sections of peat interstratified with sand and gravel in the stream trenches. At the north base of the mountain a subsidiary cone rises a thousand feet, known as Sugarloaf. The flowers become alpine in character as the snow line is approached, the heather being particularly in evidence. We circled Sugarloaf, crossed some rugged spurs and snow patches, donned our snow-glasses, and began the long trek over the smooth glaciers, armed with ice-axes, but without roping. The climb was long and easy. The crevasses are few and small. It is practically a continuous snow slope through which rise some jutting black crags which show old basalt lava sections cut by dikes—fissure-fillings of lava. The higher slope of the mountain shows crevassed glaciers or séracs on the north and north-east side. The rim of the greater crater was finally reached at 12.45. Within was an expanse of snow, probably two miles in diameter, through which three or four steaming vents have maintained openings. Here we encountered fog and rain lifting and closing at intervals. We saw a steaming cavity ahead to the right. Examination proved this to be a new crater opening which was unknown to the guide, therefore it was promptly named the "Technology Crater" of Makushin. It is a vertical cavity in the snow, 75 feet in diameter, with a 300-foot wall of bedded ice and snow behind it and sulphurous steam incessantly rising through it. A great tumble of snow or ice blocks rests in front of it, and, where the steam drifts across these, their white surfaces are yellowed with sulphur. We descended to the edge of the ice vent and looked in: it appeared to go down into everlasting blackness, and we did not follow it. There is probably from 600 to 1,000 feet of snow and ice filling the greater crater, and a steam vent in its floor has melted out this hole to the upper surface.

An inner cone of bowlders and sand was seen beyond the Technology

Crater and south of it. This was visited, and found to contain a crater some 2,000 feet in diameter, with very active solfataras or steam vents working on its northern side. There are some sulphurous coatings about the steam vents. The crater and cone are buried in snow on the south, and an ice wall four hundred feet high has been melted bare on the side toward the steam jets, within the crater. We crossed the bottom of the crater, taking advantage of a breeze which blew the noxious fumes northward, and found a pool of clear snow-melted water, which was draining into steam-holes. At a lower level within one of these cavities was a cauldron of black boiling mud, fifteen feet across. We climbed the west wall of the crater to the rim. The guide had refused to follow the party down into the crater, and we had refused to follow him across the snow, where small holes occurred, revealing columns of hot vapor. These were doubtless the tops of great melted out chambers in the ice, and we preferred to reach the bottom of the crater on foot rather than by a thousand-foot drop through one of those holes. The guide tried to reach the western rim by some circuitous route, and the scientific party meanwhile went back across the bottom of the crater, thereby losing the guide. Arrived at the bottom on the return trip, we found that the wind had changed, making it necessary to hold one's breath and run for it through the sulphur steam, trusting to luck not to fall into the cauldron of boiling mud. All accomplished this trip in safety, and after some hallooing in the fog the guide was recalled and our footsteps across the snow were retraced to the great rock rim and down the mountain. There are other active vents, but time did not allow a visit to them on this occasion. A wonderful panorama spread before the party as it emerged from under the summit clouds. Numberless snow-spotted mountains under a dull sky extended as far as the eye could reach across the eighty miles of Unalaska. Far to the east could be seen the great fjord and Amaknak Head, and beyond was Akutan, majestically spouting up four black puffs in succession as we watched. On the black ocean a speck of light moved by, the cutter "McCulloch" heading westward on an annual visit to Attu. Great moraines were crossed at the lower or northeast end of the glaciers, and at the foot of these is a circular basin encompassed by precipices. This basin is the head-water amphitheatre of Glacier River, which bursts through the moraine,—a product of the melting of the hot volcano's eternal ice covering. The return to camp was fearfully laborious, for our muscles were soft as yet and the steep path downward of the last stretch was peculiarly trying. The writer was the last man to arrive, at 11 P.M.,—a twenty-hour day. We found Dr. Eakle and Mr.

A STEAMING CRATER IN SNOW

The "Technology" Crater of the Volcano Makushin, Unalaska

NATIVES, ATKA. THE CHIEF ON THE LEFT

NATIVE CHESS, ATKA

Myers back in camp after a long and adventurous day among the northern mountains.

July 4.—The national holiday was celebrated in a wet and foggy camp, with no fireworks beyond an extra ration of maple sugar or sweet chocolate. Dr. Eakle investigated the river gravels, and returned to spend the night at the lower cache. Garman made a double trip to the cache and back for supplies. Gummere and Myers attempted to reach the glacial amphitheatre for photographs, but were thwarted by the fog. Sweeny and I returned to the upland with a view to exploring Sugarloaf. Dense fog and wetness was on everything, and guidance by compass across the tundra and snow fields was very uncertain. We found an arroyo with peat and lignite beds on the banks, and gave considerable time to making collections. A startled pair of arctic ptarmigan circled about us. As twilight was approaching, the fog lifted a little and revealed the fact that we were working in the mist only a few hundred feet from Sugarloaf, almost under its shadow, and had passed it by without seeing it.

Friday, July 5.—With wet and heavy packs, encumbered by many specimens, the expedition started down the valley on the return trip. Arrived at the beach, it appeared that the steam launch "Clara" had been sent for us, but had returned on not finding the party ready at precisely the hour appointed. There is no harbor at Broad Bay, and much exposure to the ground swell of Bering Sea. A fire of driftwood was built on the beach (it was raining, it is always raining except where otherwise mentioned) and photographic portraits were made of the whole "outfit." I proposed to Sweeny that we stay out two nights longer and make an attempt to reach an attractive young volcano which rears its head north of Broad Bay on the west side of Unalaska Bay. He assented, and we gathered together the remainder of the dried beef and hardtack, while the rest of the party bundled into the dory and rowed away to Dutch Harbor. Our route apparently lay along the beach for a mile, then up a grassy slope between two cliffs, and over spurs of the mountain beyond. The bay was full of huge black whales, puffing and snorting in endless succession. Sixty whales were in sight at one time. It seemed as though the bosom of the deep were heaving sighs to think that foolish mortals could enter upon such a hare-brained scrape as we were presently involved in. We started up the grassy slope with heavy packs, Sweeny with a pick hammer, Jaggar with the bamboo tent-pole for an alpenstock. Arrived at an elevation of a hundred feet, the slope, so innocent from below, became a succession of concealed benches. Sweeny, slightly above and to the right, was absorbed in *cutting*

steps in the crevices of the slope for his feet. His companion was unprovided with a pick for the purpose. We agreed to drop our packs,—to retrace steps downward was impossible,—and the packs bounded suggestively from ledge to ledge and rolled in fragments to the water's edge below. Once more to our perilous task, onward and upward. "Sweeny, in about a minute I am going to follow the packs!" But Sweeny was too much absorbed in his own troubles to notice. Sure enough, the ground slipped from under me, and I shot downward and outward. It was a relief, however, to note that in rolling over on his back the body of a man behaves like a log in a skidway instead of rolling and bounding like the packs. Professor J. stuck on a bench with legs dangling, and succeeded in wriggling back and building a pebble bank under him so as to assume a sitting posture. Sweeny had disappeared. Two bald eagles, startled by the latter, soared in great circles. On looking up, behold there was the eaglet solemnly cuddled into a corner of the cliff, and all the nature-study stories came back to me with startling vividness. The larger eagle would swing away out over the puffing whales and then circle back and swoop down, moving his head from side to side, so as to see his victim first with one eye and then with the other. "He knows I am helpless," came the bookish thought. But he always changed his mind when he reached the point where every detail of those awful talons could be seen. Sweeny finally succeeded in opening communications by shouting and in reaching a point on top of the cliffs where he could see me. I asked him to get down to the packs, if possible, and he disappeared. Then arose meditations on the possibility of staying perched there, plastered to the face of nature five hundred feet above the sea, for perhaps two days, until help came. And the whales continued to puff,—thud, p-S-s-s-s . . . now and then sounding, when an enormous forked tail would be left sticking straight up and slowly sinking. Sweeny finally succeeded in getting down by sliding, after various adventures over waterfalls and wading up to his middle in sea water around the ends of precipices which descended vertically to the bay. Great was the relief of the perched one at seeing him beside the packs on the beach. After a short colloquy, wherein it appeared that, if one slid on his back and edged to the right, a precipice just below might be avoided, I decided to take chances, and so wrapped my head in a polka-dot kerchief and "cut loose." As it turned out, the downward slide in leather coat, heavy boots, and gauntleted gloves was no difficult task. The tent-pole was rescued on the way, and in a few minutes professor and pupil were reunited, the former grateful for the latter's instruction, and wiser concerning the peculiarly

high grades of Aleutian slopes, masked by long grass. The slope in question when measured averaged 42 degrees. Any grassy slope over 35 degrees proved impassable without rock irregularities or steps.

The day was so far spent that there was nothing for it but to gather up the packs, return to a spring at the end of Broad Bay, and set up the pyramid tent amid the grass hummocks. All the driftwood was so wet that we could not make it burn. Thoroughly tired out and very wet, after a cold supper the two luckless voyagers wrapped themselves in their sleeping-bags and slept.

July 6.—Thoroughly tired after yesterday's efforts, there was still a lingering hope that we might cross the mountain ridge north of us and make our way to the volcano. We climbed this mountain by way of a 35-degree slope, and found ourselves incapable of more. The view from the summit showed a broad valley beyond and yet another mountain ridge between us and our goal. The return down the soft carpet of flowering plants was accomplished by the method discovered on the "eagle cliffs" with great celerity, and leaving two singular pathways straight up to the summit. The bottom land of Glacier River shows some abandoned beaches back from the water front, abandoned meanders marked by apple-green belts of fresher verdure, and two little tarns of very clear water and considerable depth occur at different levels on the north border of the valley at the foot of the mountain. They appear to have been formed by ancient landslides. Everywhere on the mountain slopes and in the valley are the most beautiful flowers. We collected dried willow fagots, carried them back to camp, and cooked a hearty meal of pea soup, tea, and apple sauce. The weather was rainy.

July 7.—Again there are forty or fifty whales making the bay breathe. It is a calm morning, and thousands of white sea-birds are out upon the water. We broke camp, Myers and Gummere came for us in the launch, and on the way home we explored Captain's Bay. Ducks, puffins, and divers were seen in abundance. Some experiments were made in sailing the dory and beaching the launch. The revenue cutter "Perry" has come into Unalaska with two Japanese schooners in tow. They are seal poachers, taken red-handed off the Pribilof Islands by the steamship "Manning." After returning to the schooner and preparing letters and despatches, I called on Commander Werlich, U.S.N., in charge of the light-house tender "Armeria," and, thanks to his courtesy, was enabled to send off material for prompt transmittal to Sitka.

July 8.—All day long a violent blow and rain from the south-east, a veritable Alaskan "woolly," made any progress impossible. At night films

were developed. It is profitable to develop photographs as we go. The dampness otherwise is almost certain to damage films which have once been open and exposed.

July 9.—After making last purchases at Unalaska, an interesting lot of information was obtained from Captain Dirks, who for many years has kept stores in Atka and Attu. From a study of the charts with Captain Dirks I learn that there are two marked belts in the islands, a northern and a southern, characterized by different geological habit. In the northern belt are all the active volcanoes. In the southern are the older formations. In many places these two belts are quite strongly marked by the topography. Thus in Unalaska and Atka there are deep bays east and west, which lie in the dividing line. It promises to be a matter of the utmost interest to learn what the principal differences of the two belts are. The fact that the volcanoes lie on the side of the concavity of the curve of the chain, toward the smaller sea, is analogous to conditions in the Caribbees and elsewhere. There is one hill near Captain's Bay containing a granitic rock, diorite. Captain Applegate informed me this was said to be the only granite in Unalaska. Later discoveries disproved this. A native of Unga, of creole blood (that is, partly white and partly Aleut), William Gardner by name, has been engaged to act as pilot and interpreter in the western islands. He is a hunter by trade, and has hunted foxes on Adak, west of Atka. At 1.20 P.M. the "Lydia" was towed out from the wharf, and, after stowing the boats, set sail with a southerly breeze. A strong south-west sea was encountered outside.

July 10 *to* 12.—With violent head-gales we made very slow progress. A first attempt to reach Bogoslof failed. The mate is prostrate with a strained back, the captain has boils and a wounded hand, and nearly everybody in the cabin is sea-sick. For much of the time the vessel was hove to in fog and rain.

July 13.—On going on deck at 3 A.M., I found the ship beating into Makushin Bay with a S.S.E. wind. Overhead was a breaking cloud scud, and there were glorious views of snowy peaks and deep fjords in all directions. The "Lydia" anchored close to the shore in a good harbor at 9.30 A.M. A row of huts on the beach is known as Makushin Village. The place is squalid and the natives unkempt. The "chief," a harmless young man with no mark of administrative power about him, was secured as a "guide" to accompany Myers and Sweeny in a second ascent of Makushin, this time from the south. He said he had been up three times, but the event proved that he had been only to some solfataras at the foot of the moun-

tain, and he came back a wreck from snow-blindness after the experience that the relentless youths of M. I. T. put him through. They succeeded in reaching the summit, exploring new active vents, and obtaining valuable records and photographs.

The remainder of the scientific party, Eakle, Van Dyke, Gummere, and Jaggar, accompanied by the seaman Fred, took the launch to the extreme eastern arm of Makushin Bay, which was named Seeley Bay in honor of Captain George Seeley, master of the "Lydia." Makushin Bay is a deep fjord with four fingering arms, the southern two being forked extensions of the greater arm named Anderson Bay. From the north a group of towering needle rocks jut into the middle of the bay. Near the head of Seeley Bay, at the mouth of a valley on its north shore, camp was set up in the tundra with a large wall tent, the magnetic instrument tent, and a pyramid tent. In the large tent the box stove was used, and both driftwood and coal furnished fuel.

July 14.—The day is rainy, but the precious days on land must not be wasted. Gummere set up his instruments, Eakle collected rocks along the shore, the doctor and Jaggar tramped up the valley to the north-east with a view to exploration of the saddle between Makushin Bay and Beaver Inlet. This is a critical place, because it is just on the border line between the supposed northern belt of younger volcanic rocks and the southern belt of crystallines. What these crystallines will turn out to be is becoming an exciting speculation. On the shores of Makushin Bay there are many pebbles of granite. Where do they come from? South-east of the head of Seeley Bay there is a great group of snowy serrate peaks and glaciers, culminating in an impressive mountain not unlike the Dents du Midi at the end of the Lake of Geneva. This mountain we have named after our schooner, "Lydia Peak." These mountains rise to heights of five thousand feet, and in every way are topographically contrasted with the rounded grassy mountains or conical peaks of the north side of Makushin Bay. Makushin is the only important high mountain on the north side, and that is a smooth dome, very different from these alpine tooth-like summits of the south. It is evident that a new rock of some resistant character makes the southern mountain range, and the suspicion that it will prove to be granite or diorite is strong, for it weathers like granite, and granite must be somewhere hereabouts, as shown by the beach pebbles.

Hence it was a matter of keen interest to watch the stream pebbles of the two forks of this Camp Creek. The north fork drains the northern rounded hills, and the south fork drains the critical divide line, with the

beginnings of the serrate range rising from its southern bank. The pebbles in both forks are greenstones, agglomerates, and some slates and quartzitic-looking rocks, but in addition the south fork shows some well-rounded pebbles and bowlders of coarse diorite. The abundance of these in the South Fork suggests that this rock occurs in that direction, somewhere near the head-waters of the stream. A study of the southern mountain slope along the lower course of the stream shows this ridge to consist of a heavily bedded volcanic series of strata, aggregating ten thousand feet in thickness, the rocks being tuffs, andesites, and agglomerates. The beds dip 26 degrees N.N.E.; that is, away from the supposed granites of the south, as though tilted back by them or resting on their flanks.

July 15.—The day was fine, and the morning was given to photographing Lydia Peak, which is magnificent from our camp ground near the mouth of the creek, and also making photographs of typical groups of flowers and ferns on mossy banks. In the afternoon I went up the spur of the mountain south-east of the camp (that is, the ridge noted yesterday as composed of ten thousand feet of dipping volcanic strata), and quickly startled from their eyrie the usual pair of bald-head eagles and their solemn lone eaglet sitting sullenly on an inaccessible shelf. For any one desirous of collecting eagles and studying their habits, this country should be a paradise. The great series of tuffs is continued through the mountain, and, following the crest, I crossed many dikes of silicious porphyritic rocks, perhaps offshoots from some larger masses of granitoid rock which lie to the south. A charming native of the heights is the snow bunting, always met here as one reaches the snow patches about the fourteen-hundred-foot level, the male bird snow-white with patches of darker color, the female less conspicuous. At this season they are always in pairs. The doctor has found skeletons of small rodents, and I have seen some mole or mouse-like creatures running through the grass. At the foot of Lydia Peak, across Seeley Bay at its head, there is a green lake in a rock basin with waterfalls below it and moraines above it, probably a hundred feet above the salt water and separated from the bay by a low rocky ridge. The Lydia Peak range forms a crescent of glacier-covered mountains around this lake, and a long spur of apparently volcanic rocks extends westward from the lake district to divide Seeley Bay from the next embayment to the south. I hoped, on ascending the mountain to-day, to get a view of the Pacific through a supposedly low pass north of Lydia Peak, but the pass proved to be a high snow-covered ridge, with another obstructing high peak north of it. On going two or three miles to the east along the summit, I secured a good view of Beaver Inlet and

McCULLOCH PEAK, BOGOSLOF, LOOKING NORTH-WEST

SHALER MOUNTAINS, UNALASKA, FROM MAKUSHIN VILLAGE

NAZAN BAY, ATKA, FROM NAZAN VILLAGE, LOOKING EAST
New *Bara-bara* in Foreground

AGED ATKAN WOMAN WEAVING MATTING

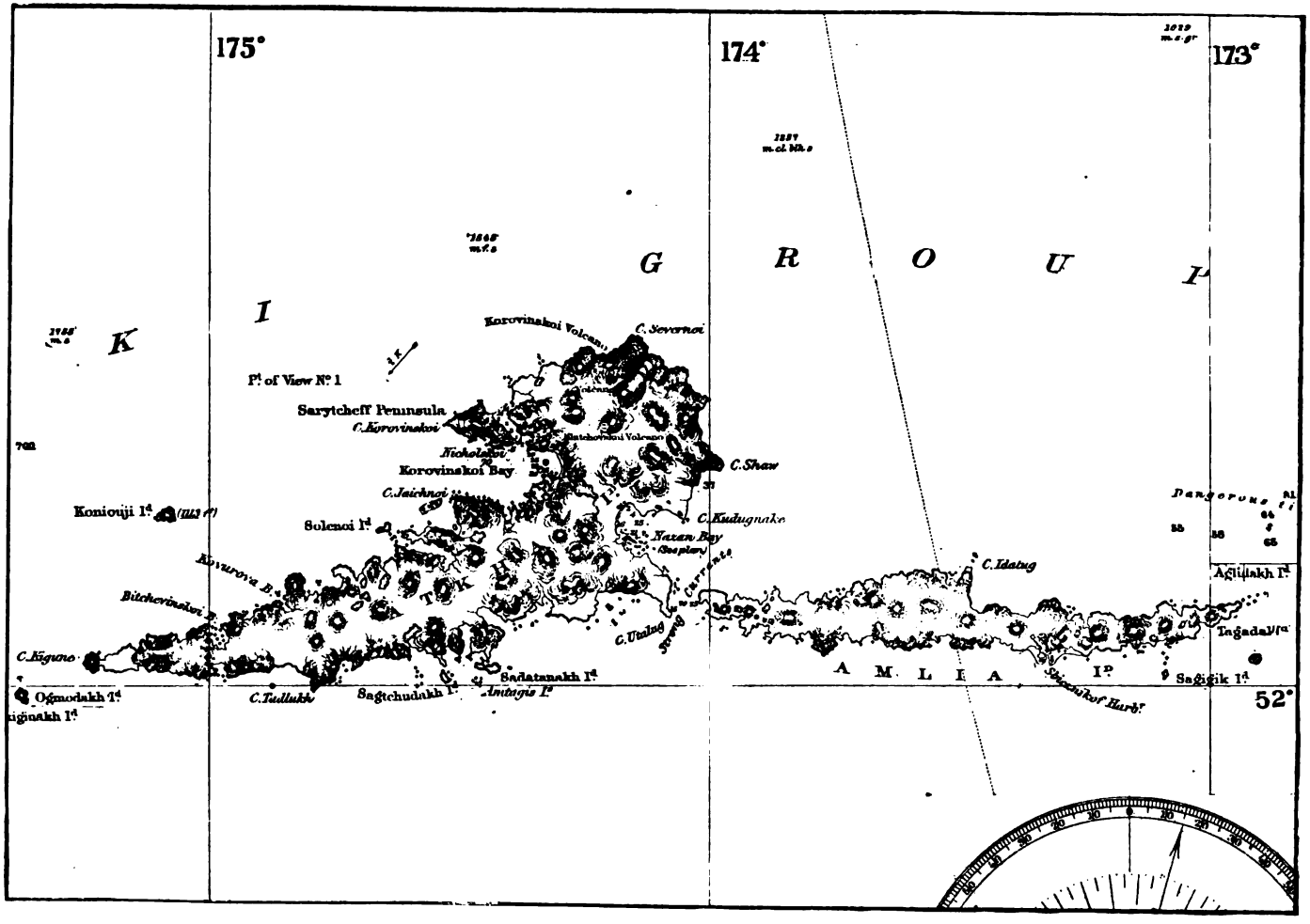
the whole range of mountains in the peninsula which bounds that inlet on the south for twenty miles. These mountains are not like the serrate glacial range south of me, but are lower, pyramidal or hilly, and look as though they might be the same ancient volcanic rocks as this ridge. There are some beautiful deltas built out at the mouths of streams which enter Beaver Inlet. The whole pass through from Seeley Bay to Beaver Inlet is only six or seven miles long. The doctor turned up on the mountain slope near the head of the pass, and together we dropped down a steep gulch to return to camp by the valley. Van Dyke tried a rock slope and had a narrow escape from falling while crossing the face of a very steep cliff, while I went down the ice in the gulch, taking chances of going through it to the torrent below or of glissading. We came out all right by a narrow margin. We returned to camp without having found the granite in place, but convinced that it was not far to seek.

July 16.—Eakle's work at this point along the shore has revealed quartzitic rocks full of mineralization which strongly suggest the proximity of a granite contact zone. Everything leads to the supposition that granitic rocks ought to be found, if we go south. Accordingly, we broke camp in a disagreeable drizzle, which lasted all day, embarked in the launch and skirted the south shore until we reached the south-west arm of Anderson Bay, and were right under the cliffs of the serrate mountain range. True enough, it proved to be a massive granite, passing into diorite along its contact zones. The great platy joint surfaces of the cliffs suggest Norway or the Yosemite. The valleys are U-shaped, carved by glaciers, and glaciers still rest in the amphitheatres at their heads. The secret of the high mountain range was revealed, and this range was named the Shaler Mountains after the late honored Professor Nathaniel Southgate Shaler. The granite contains pink veins of aplite, it varies to very coarse mineral aggregates, is rich in quartz, and, if we found it in the Sierra Nevada, we would suppose it to be of Mesozoic age. It seems, however, to cut the volcanic series. Is it possible that the thick series of volcanics studied on Seeley Bay are Jurassic? No fossils were found, but the rocks are so fresh and "young-" looking from a geologist's standpoint that one would suppose them to be Tertiary. If so, can such a coarse massive granite be supposed to be intrusive into Tertiary rocks? That is, be still younger yet? The granite is still a puzzle. The granite was found to extend northward to the mouth of Anderson Bay. Here, on one of several granitic islands in the bay, there are thousands of sea-birds nesting, protected from the voracious foxes of the mainland. We saw a big red fox running along the shore, for some

time unabashed by the chug-chug of our motor. Among the birds are puffins, gulls, guillemots, cormorants, and divers. We ran back to the schooner off Makushin Village. The Makushin party had returned, both Sweeny and the guide suffering somewhat from snow-blindness. The mate's back was well again, and the cutter "McCulloch" lay at anchor in the harbor. She had made the run to Attu and back, and had a report of Bogoslof, where a new steaming cone in the midst of a continuous stretch of beach and bar had risen from the sea in the last twelvemonth, filling a space where seven fathoms of water had been.

July 17 *to July* 23.—Starting from Makushin at 11 A.M., July 17, we sailed west, intending to make a reported anchorage in Inanudak Bay, Umnak. The slopes of Cape Tanak and northern Umnak are long, gently sloping, and green, with brown lava fields. All day long, July 18, Bogoslof was in view to the north, the northern rock flat-topped, the middle ones steaming hard, the southern high with a sharp horn at its north end. The weather is cold, between 40 degrees and 50 degrees Fahrenheit. In the evenings violent arguments engrossed attention, covering the whole range of human thought from theology to microbes. These discussions are among the pleasantest memories of the voyage, and on no occasion was there a serious jarring note to interrupt the good fellowship of the six men huddled for four months in a cabin twelve feet square. The cabin was heated and dried by lighting one of the "Primus" oil stoves. On July 20 we made Inanudak Bay under lowering clouds and a south-west wind. The wind literally followed the shore, and there was no shelter to be found. The captain grimly gave the word to "get off the beach," and we ruefully saw the unexplored land recede astern. With a S.W. gale and no hope of progress on our course, one sailor ill and others suffering from lacerated and infected hands, water supply short, a choppy sea, and Attu as far off as ever, it was a time to try men's souls. The doctor has a daily surgical session in the cabin, washing and dressing various small injuries. The only observation obtained in these days was a sight on two high snowy peaks, July 22, far to the south-east, probably in the Four Mountains.

July 24.—Fog and W.S.W. gale continue. I looked over the chart with the captain, and noted that according to his reckoning, after all these days without land or sun for guidance, we should make the coast of Atka or Amlia this afternoon or evening, unless unknown currents have taken us a long way off the course. At 5 P.M. we were scudding along on the starboard tack, when land was called by the watch, and there, right over the bow, close at hand, coming out of the fog, was the long slope of a volcano with a rocky



MAP OF ATKA AND ADJACENT ISLANDS

headland below. The schooner was put about and headed N.W. on the port tack, and later in the night headed S.E., so as to be off Amlia in the morning. The land sighted was the north head of Atka, east of Korovinski Volcano, and we were just seven miles off the captain's reckoning, after sixty hours without an observation amid strong unknown currents. This was only one of many illustrations of Captain Seeley's careful seamanship.

Thursday, July 25.—At dawn the "Lydia" was off the north coast of Amlia, beating towards Nazan Bay, Atka, under a north-west wind and gradually clearing skies. For once the fog had lifted and revealed the long mountainous profile of Amlia, rugged, but not very high or snow-covered, and recalling the mountains of Tigalda or the range south of Beaver Inlet, Unalaska; that is, the old volcanic series. In sharp contrast to the southern belt, of which Amlia is a part, the mountains of northern Atka rise as great snow-clad cones and glaciated peaks, reaching heights of from three to five thousand feet. These, as in Unalaska, are largely active volcanoes, of which Korovinski is the highest, and occupy a northern peninsula separated from the elongate east-west southern range by Nazan Bay on the east and Korovinski Bay on the west. Amlia, separated from Atka by a narrow pass where "furious currents" run (quoted from the chart), is really an eastward extension of southern Atka, and the two together are about one hundred miles long. After some delay occasioned by lack of wind when the lee of the land was reached, the vessel made harbor in Nazan Bay, behind a group of islands, at 11.30 A.M. We were close to a cove, where is the little village of sod huts and frame houses that contains the whole population of Atka, one hundred and ten souls. Said population trooped up to the top of a hill close to the water, and gazed, open-mouthed, at the strange sight of an unknown schooner making harbor there. It is for them one of the epoch-making events.

The scientific corps at once set to work preparing for inland expeditions —Myers and Jaggar to go northward, and Eakle, Gummere, Van Dyke, and Sweeny south to the Pacific Coast. In the afternoon both expeditions started, Dr. Eakle's party making camp on the shore south of the Nazan group of islands, near a waterfall which is conspicuous from the bay. They afterwards made journeys inland and across the island, and found a basaltic volcanic series of ancient rocks, but no sign of granite or diorite. Professor Gummere established a magnetic station, and Dr. Van Dyke collected quantities of plants and insects.

Two sailors landed the northern party on the black sand beach two miles north of the village, and we donned our packs and headed towards snowy

peaks at the head of a grassy valley. Camp was made on high terraces beside a strong glacial stream, in full view of Nazan Bay dotted with islands and Amlia Pass beyond. The "furious currents" of the pass are marked by lines of white foam, and the bay is full of sunken rocks, plainly visible from this height.

July 26.—There was rain in the night. We explored the peculiar terraces beside this stream and the amphitheatre at its head, where a low steep conical hill rises, surrounded by a semicircle of high mountains. The semicircle opens southward towards the bay. There is a cold north-west wind blowing: it is a half-clear day with clouds on the mountains. The view towards the bay discloses a succession of hummocky and half-grassed sea-walls of black sand back from the water front, suggesting uplift of the lowland which separates Korovinski and Nazan Bays. This lowland is occupied by eight shallow lakes. The peculiarity of the terraces of the stream by our camp is that they have no flat top, but a wavy upper surface, and, when examined in section, consist of more or less angular bowlders and gravel with no marked bedding. This deposit has been trenched to depths up to fifty feet by the streams. The thing suggests some sort of tumultuous flood deposit, but whether it is glacial or volcanic, or both, as in the ice floods on the volcanoes of Iceland, does not yet appear. The mountains about this amphitheatre are clearly volcanic, and the whole semicircle with conical hill in the midst strongly suggests an eroded crater. On the west the mountain wall is jagged and grotesque; on the north are two high snowy crests, one a smooth dome, the other serrate; on the east are conical peaks. We crossed a columnar basalt flow, which shows in fine palisades on the north shore of the bay to the south, and climbed the conical hill. This hill proved to be a mesh of dikes of volcanic rock, and may well mark the site of conduits under a crater. Some bread-crust bombs were seen lying about. It is connected by a low saddle with the northern mountain. Moraines occupy the upland basins at the sides of the conical hill, and glacier remnants showing some crevasses appear under the high snows. We found a ptarmigan chick in the grass and saw the old bird. The long sedges and flowering plants are even more profuse than in Unalaska. The doctor afterwards reported that he found the boreal types of flowers at lower levels on Atka.

July 27.—We have named the white dome Mount Niles in honor of the distinguished Professor Emeritus of the Institute, and the serrate peak Mount Crosby after Professor William Otis Crosby. The western peak, with its outline of gnomes and goblins against the sky, we call Hoodoo

MOUNT NILES, ATKA, LOOKING NORTH

MOUNT CROSBY, ATKA, LOOKING EAST

Mountain. A pass across the mountains at the head of this valley appears doubtful, hence to-day's programme is to move camp westward around the south base of Hoodoo Mountain. We photographed the terraces on the way, it being a fine day, and then ploddingly trudged at a high level until we came to the south side of a deep and broad flat-bottomed valley which empties its milky river into Korovinski Bay. A fine view was obtained of this bay, bordered with high cliffs on the north and many rocky coves on the south. Some of the rocks on the points of land jut out of the water like leaning towers. One of them resembles a porpoise standing upright on his tail. We could see all the three headlands to Cape Kigun, the south-west point of Atka, and their alignment intersected the north shore of the bay below us at a very different point from the one indicated on the chart. It is a wonder, however, that the charts of these islands are as good as they are in view of the difficulties of navigation and the length of time it would take to make good maps in waters where it is always foggy.

The Milky River, to give it a name, heads on the west end of Mount Crosby and flows west to the north shore of Korovinski Bay, about eight miles. North of the valley there is a steep cliff, and then comes a broad upland plateau, surrounded by mountains. The western mountains are divided by a narrow fjord, Korovinski Harbor, trending N.–S. East of the plateau Mount Niles towers directly above the Milky River valley near the head of the river. Mount Niles is on the north side of the valley, and, to ascend it, we have before us the prospect of descent a thousand feet to the flat valley bottom and up four (?) thousand on the opposite side. During the day the clouds on this mountain and a still higher pure white dome beyond opened and shut, making wonderful alpine effects. The farther dome is probably Kluchovski Volcano, shown on the old charts.

We travelled on the high south slope eastward up the Milky valley until the wall became too steep for further progress. The valley narrowed to a box canyon cut in horizontal basalt flows. Above us the crags of the north side of Hoodoo Mountain rose into the clouds. Ahead, as we rounded the point of a spur, were seen the ice cataracts of three glaciers descending from Mount Crosby. These glaciers are the head-waters of Milky River. Below us vertical precipices overhung the torrent. We made camp for the night in an upland basin on a grassy flat among the snow patches, with cold snow water babbling by. The same lignite or peat, interbedded with mud and sand, was found on the walls of the rill trenches here as on the Sugarloaf plateau in Unalaska. As this basin is on the same level with the broad plateau across the valley to the north, it is probable these high level plateaus

are all floored with tundra sections showing lignite. It is a matter of interest to know whether the plants making the carbonized layers are identical with the modern grasses or are of Tertiary age. If they are Tertiary, then these plateaus at the thousand-foot level mark an uplift common to both Unalaska and Atka since that period, supposing the surface to represent an old flood-plain. The Milky River valley shows no evidence below the plateau level of terracing and none of the irregular terrace phenomena noted at the first camp in the northern valley.

July 28.—We broke camp and moved down very steep slopes, sliding, rolling, and tumbling, to the valley bottom. Fording the stream was a matter of some difficulty, and above boot-tops. The weather holds fairly good with only occasional rains. The valley walls are horizontal beds of coarse volcanic agglomerate alternating with basalt flows. We cached specimen collections, and everything which we could spare, in the grass by the river, and with lighter packs climbed an oblique slope to a high basin, where a new camp was made under the snows of Mount Niles. On the snowy ridge above this point we saw steam yesterday from across the valley, and we are making for that steam. The basin is open to the south towards the valley, and there is a cavern in the rocks above a slide-rock slope just above the camp to the east. Just before starting up the north cliff, while we were below, the clouds cleared away from Mount Crosby to the east at the source of Milky River, and gave opportunity for a most picturesque photograph. The mountain is exactly at the head of the valley, and from this side is less serrate and more snowy than when seen from the Nazan Bay side. Its height, like that of Mount Niles, is probably near four thousand feet. Two new geological features of interest were discovered in the high basin: there was fresh volcanic cinder on the surface of the snow patches, and Myers discovered outcrops of slate just above the camp ground. The cinder means that some volcano hereabouts, probably either Kluchovski or Korovinski, is actively exploding. The slate is incomprehensible among these lavas: it is either a tuff which has been compacted to appear like slate or else one must suppose a huge block of some deeper ancient rock has been vomited up or carried in a lava flow to its present position.

While we were seated in the open tent, preparing supper, a coal-black fox with a silver-white tail came trotting along across the tundra and down the little gulch at our feet. He was a beautiful creature, his immense bush held straight out and gently waving from side to side, two-thirds of it, from the tip inward, being snow-white, the rest black with a sharp transition line. No white showed on his body, though there may have been a

white patch under his throat. The pilot afterwards told us that there are no black foxes on Atka, and that what we saw was a blue fox. This I doubt, for the white tail and coal-black color are not characteristics of the blue fox. We afterwards regretted that we did not shoot him to settle the point. He saw us, bounded up a nearly vertical bank of peat and sod, and then made for the snows, trotting across the white patches, stopping and turning about to gaze at us, then going on up among the rocks, again stopping, and again loping with a curious awkward but effective trot across another snow patch until he disappeared behind projecting crags. The fur of such animals is of no value in the summer season.

July 29.—It was supposed, when we selected this basin as a camp ground, protected on the west, that it would be shielded from the prevailing south-west or north-west gales. Hence our disgust this morning to find fog and rain coming in from the south. The clouds are over everything, and it is raining steadily. We drove in an extra peg to windward, and lashed the peak of the tent with a guy-rope, piling heavy stones on the peg. Then we made ourselves as rain-proof as possible, and started up the mountain with a lingering hope that it might clear at noon and allow us to make the ascent of either Kluchovski or Mount Niles and find a crater. We soon discovered snow patches in the brooks which showed an arch of snow over the water, and some with caved-in portions. This suggested that this water was warmer than common at its source. It did not feel particularly warm to the hand. On ascending one of these brooks, the broken down snow patches became more frequent, until they were open gorges with snow banks on either hand. Then steam appeared rising from the bare rocky heath, and the source of the warm water was discovered. Over a tract an acre in extent there were yellow, brown, and red discolored patches of decomposed rock with steam rising through the crevices, and in the midst of a tumble of ledges and bowlders was a pool of clear water, boiling hot, and in ebullition in places. This pool was oval in plan and thirty by twenty-five feet in dimensions. Here and there among the solfataras were little "paint pots" of boiling mud, pearl-gray or brown, with sulphur about the margins. There was some odor of sulphurous acid in the vapors. The boiling pool had no very pronounced taste. The cold wind and beating rain made any lingering to take notes bitterly cold work. A few photographs were made in the rain. Then we selected a place on the border of the hot pool where steam rose through the rocks, and sat down to eat luncheon in a steam bath. The warmth was very grateful in contrast to the cold wetness of everything else, for we were already soaked to the skin. The rocks of this mountain,

except for the slate noted, are basaltic agglomerates and lavas, and there is little doubt from its form, coupled with this occurrence of hot solfataras on its flank, that Mount Niles is a volcano, and probably there is a crater somewhere above us. But there is no use in going higher in such a storm and dense fog. We returned to the tent wet, but not discouraged, determined to put in another night in the hope that the weather would change and give opportunity on the morrow for an ascent of the mountain. The wind appears to be more south-easterly, and we find our little silk tent rocking violently, exposed to every gust. An investigation of the larder revealed the fact that the hardtack was almost gone, the kerosene for the "Primus" stove would serve for another morning's coffee and no more, and the dried beef is becoming so hard—it was cut too thick in the first place—that it is difficult to swallow. In fact, this cold diet, coupled with constant wetness, is beginning with me to produce a form of dyspepsia which is unpleasant, a sort of stopped-up-throat feeling with little knives going through my chest and back. The dried California figs do not swallow any too readily.

We reinforced the guy-rope, and in the middle of the afternoon crept into our sleeping-bags to save kerosene and try to keep warm. Every now and then one of the iron tent-pegs would pull up and the silk begin to flap and thrash. Then one or the other of us would have to crawl out, get wet all over again, drive the peg in and pile stones on it. The storm increased during the night, and the bamboo tent-pole had to be nursed by various devices in order to keep it upright. Finally there was heard a suppressed imprecation from Myers anent his "Johnson" bag, which up to that time had been defended against all comers as wondrously convenient, *waterproof*, and warm. It was on the windward side of the tent, and there was a pool of water inside of it. Myers had used up his entire reserve of clothing, and at this stage had no dry nether garments of any sort. I had one woollen undershirt left, and loaned him that, and it was promptly converted into a "universal" suit. It would be difficult to devise a more completely miserable situation than was that of the two forlorn occupants of that little silk cone through the long, stormy, wet, sleepless night, baffled, hungry, midway between America and Asia, between the Arctic and the mid-Pacific, between earth and sky, and far from any warmth or any base of supplies.

July 30.—At the first gray of daylight, the tent a wreck, the storm unabated, driving, cold, we made a cupful of coffee with difficulty, and broke camp. There was no use in waiting longer for a break in the storm. Several streams to ford were between us and the schooner, the rain was increasing their volume, and we were without food, fire, or effective shelter.

Besides, there were signs of exhaustion and chill beginning to appear in both of us, and the route back to the schooner was over miles of *terra incognita*, largely swampy hummock-grass. Therefore I gave the word to pull up stakes and make for Nazan at any cost. The one thing to do was to keep going so as to hold the blood in circulation, and at the river cache there was a small supply of food. The kerosene was exhausted. At 3.30 A.M. we left the "Black Fox Camp" and plunged down the mountain amid sheets of driving rain over wet and slippery grass. The quality of that grass, when wet, we had to learn by another experience. Coming to a steep slope with a little grassy platform at its base, and beyond that a gorge with a torrent, I led the way by sliding down the slope in a sitting posture after the fashion so effectually demonstrated in Sweeny's company at the mouth of Glacier River, July 6. Myers was following close behind. We thought to stop on the flat platform below, but had not figured on the slippery wet grass. Instead of stopping, my body shot across the bench like a toboggan, and into the gorge beyond. Myers did the same, and with a yell of warning came hurtling through the air plumb on top of me, and we sprawled in a heap at the side of the brook. Fortunately, the gulch proved to be only ten or twelve feet deep, and we landed in a pool of water without striking any rocks, and Myers landed without striking me with his boot, so that no bones were broken and we had "discovered" a new quality in this wonderful basket-making grass for which Atka is so famous.

We reached the cache at the ford of Milky River, and had "luncheon" there at 7.30 A.M. The ford was made without accident, but we did not attempt to take up the specimens at the cache,—we were too heavily laden as it was. We tramped down the south side of Milky valley to the shore of Korovinski Bay, noting a double sandy sea-wall back of the beach, forty feet high, similar to the walls on Nazan Bay, but not so many times repeated from the beach inland. The shore of Korovinski Bay was followed for two or three miles eastward,—we were no longer capable of judging distances. Then we cut inland in order to cross the low lake district to Nazan Bay. Here difficulties came thick and fast. Packs were becoming insupportable, the grass was like wet mattresses and induced repeated falls, a narrow stream had to be forded, and it proved more than waist-deep and very cold. Beyond the stream came hills, and the topography appeared different from what was expected in the lake country. Eastward by compass,—on and on,—and now we hold a council of war. The wind and sleety rain are beating in our faces, and the weight of the packs is intolerable. It is all we can do to drag ourselves in this tumble of deep grass. We make careful note of

the landmarks, and drop our packs—camera, precious note-books, everything—and struggle to the crest of a neighboring ridge to get a view. The making of this last cache seems to be the signal for a change in luck. Just over the ridge was the large lake, and across it could be seen the native trail which leads from Nazan to the dam and salmon stream at the outlet,—the deep stream we had forded. We did not know this trail at the time, however, but we knew the lake, and waded in the shallow water up its north shore, finding the lake bottom preferable to the hummocks. At the east end a trail was found and followed eastward, passing other lakes, until we reached the black sand beach on Nazan Bay. It was then merely a work of grim trudging, with muscles almost played out, hands numb, and flesh white with incessant wetting, to carry us south along the beach and over the hill to the village. We reached Nazan about noon, roused William Dirks, the son of Captain Henry Dirks and local storekeeper, and borrowed his skiff to row out to the "Lydia." Never did brick mansion look so homelike to wanderers as the little cabin of the schooner, with the good captain, Dr. Van Dyke, and Professor Gummere to greet us, and the old Norse cook grinning out of the porthole in his warm galley whence rose coal smoke! In her snug harbor the vessel was absolutely protected from the storm which continued to howl outside. Our friends said that our appearance was memorable, and that we "looked just about all in," in the vernacular of the times. After a bite of hot food we turned into our berths and slept the sleep of the blissful.

July 31.—After another night of storm the weather begins to show signs of clearing. Eakle and Sweeny returned in the morning from the southern camp. In the afternoon Eakle, Dr. Van Dyke, Gummere, and Jaggar went across country to the large lake to recover the note-books, camera, and packs left at the last cache made by the storm-driven northern party. Going by the south side of the lake, a native trail was found in the grass most of the way. On the return, laden with one of the packs, I stepped from a higher to a lower hummock on the steep hillside overhanging the lake without perceiving that beside the lower hummock was a deep hole. The result was a sprawl at full length in the shallow water below. On the return we passed over the remarkable succession of sea-walls back of the beach at the head of Nazan Bay. There are six walls, the back one thirty feet above sea-level, the front one twenty feet. The back one is one-third mile from the shore, and each wall is about a mile long. They consist of black sand, the remoter walls being more heavily clothed with dense grass than the front ones. There is a broad swamp and some ponds back of the

wall farthest from the beach. At either end the walls, like the present beach, are terminated by rocky hills. Apparently, they have been formed by elevation of the coast, which has brought to relatively lower levels the zone where the storm waves of flood-tide hurl up a sand barrier.

August 1.—Myers and Sweeny departed early to return to the river cache and recover the specimens which we left there. They returned at one o'clock. Eakle and Gummere made an official call on William Dirks, the storekeeper, and brought him on board the schooner. I presented him with a cheese. With the aid of Mr. Dirks, and also of Gardner, the pilot, a number of baskets have been secured for the party from the native women. The natives of Atka are a sturdy lot, and appear in much better health than those seen in Unalaska. Their bidarkas are wonderfully well made, and, when laced into the hood in the middle of one of these skin canoes, the intrepid Aleutian hunters propel themselves fearlessly with double-ended paddles out into the open sea from one island to the next. They will face the tide-rips and heavy storm waves of Bering Sea in these shells, and are prepared, if they turn over, to roll, aided by the paddle, back to an upright position. The bidarka is decked with sea-lion skin, the hood keeps water out about the hole where the paddler sits, and he is usually clad in the kamlieka, or seal-bladder shirt, which, laced about the neck, is an effectual waterproof garment. A crowd of native men came on board to purchase staples in small quantities from the ship's stores, such as tea, sugar, flour, tobacco, knives, cartridges, and shirts. Their purchasing medium is coin, chiefly half-dollars and quarters. They know nothing of bills, and small change requires much explanation. We entertained them in the cabin with the phonograph and legerdemain. The men were amused, but in no way evinced extraordinary astonishment. Through the visits of revenue cutters and other vessels they have seen enough of the outside world to become fairly civilized. The prevailing costume consists of a small cap, jumpers, and blue jeans. The natives appear like Indians, but here and there the eyes have the Mongolian habit. There is a large admixture of Russian blood, so that a full-blooded Aleut is rare. The women are the basket-makers, and are very industrious. The grass is collected, assorted, and dried in bunches. It is stripped and split for the finer work. It takes a year or more to dry a bunch to the right tone for fine basketry. The climate is so wet that great care has to be exercised to prevent the grass from rotting. The baskets are woven free-hand with the simplest possible apparatus: thus a lard-pail turned bottom up on a stool and wrapped with two or three layers of newspaper will serve as mould for a medium-sized

basket. With such an apparatus the weaver sits on the floor beside it, and, starting the bottom of the basket with radial grasses on the middle of the bottom of the inverted lard-pail, she rapidly weaves a concentric woof of grass, turning the basket around in the process. From time to time, as her copy may demand, she places a bit of silk or worsted among the strands, and it takes its place in the pattern with miraculous effect. The women are paid from two to eight dollars by the traders for baskets which sell to collectors in the abodes of civilization for from twenty-five to a hundred dollars. The finer work, which generally takes the form of belts, telescopic card-cases, or bottle covers, is unrivalled for delicacy of weave and design, by any other basketry in the world. These poor women have no notion that their work is world-famous, and they present an extraordinary example of island isolation developing in a tiny community a unique industry, furthered somewhat, doubtless, by the peculiarities of the native grass. Children of all ages from five years on show proficiency in basket-making, but of skilled adult workers there are probably not more than twenty-five or thirty in the community.

August 2 to August 6.—Another day was spent at Nazan, photographing the natives and their cleverly constructed houses and equipments. A gift of one hundred pounds of flour was sent to the chief, and at 9.30 on the morning of the 3d the "Lydia" sailed, east-bound. With south-west winds the voyage eastward was uneventful. Fine views were obtained of Korovinski and Kluchovski volcanoes in northern Atka, and of Seguam, an island volcano lying next east to Atka. Seguam in 1892 was violently active, so that its eruption was seen from Nazan Bay and the sky was darkened by the ash. On the 4th and 5th good progress was made, but fog again prevented a visit to the harborless islands of the Four Mountains and other points between Atka and Umnak. On Tuesday, the 6th, Umnak was sighted at 8 A.M., and preparations were made for a vigorous investigation of Bogoslof in the hope of fine weather there.

Wednesday, August 7.—At 6 A.M. Bogoslof was in full view ahead, the weather fair, a steady south-west wind blowing. It was determined to land two dories and have the vessel stand off, while three or four hours, if possible, were spent in examination of the island. The landing was made at 10.30. Hundreds of immense sea-lions, bellowing with voices that well justify their name, swam within a stone's throw of the dories, when they would raise themselves high in the water, stare, and then plunge frantically beneath the waves. When we landed on the beach, most of the animals there had floundered into the water; but one immense bull re-

BOGOSLOF, LOOKING EAST. AUGUST 7, 1907

Fire Island Metcalf McCulloch Old Bogoslof

METCALF CONE AND ITS SPINE, BOGOSLOF FROM FIRE ISLAND

MURRES, CHICKS AND EGGS, FIRE ISLAND, BOGOSLOF.

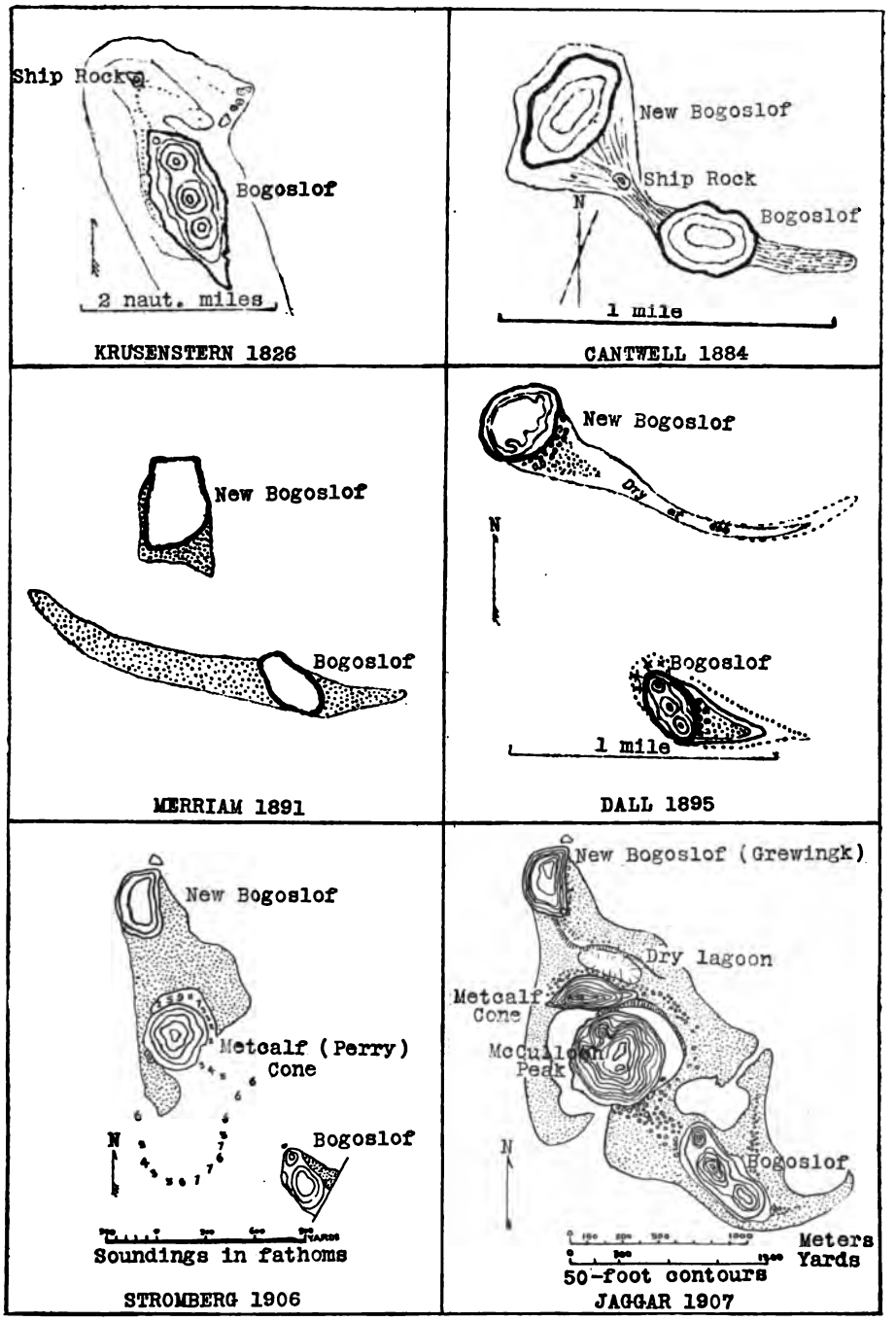
mained, apparently asleep. One of the party ran toward him with a camera, the monster awoke, and with awkward gait floundered toward the sea, but did not make his escape until several snap-shots had been secured.

The hours spent on Bogoslof were the most interesting of the whole trip. The rocky cliffs are covered with millions of birds, their eggs and their chicks, chiefly murres. On startling them from the face of the cliff of old Bogoslof, the southernmost rock of the group, the swarm of winged creatures literally darkened the air. To members of the party climbing among the rocks the stench from offal and decayed eggs was intense. The island consists of four prominent peaks, old Bogoslof at the south, McCulloch Peak steaming actively in the middle, Metcalf Cone (sometimes called Perry Peak) adjacent to McCulloch on the north, and New Bogoslof, or Fire Island ("Grewingk"), a flat table rock at the north-west end of the group. These are now all connected by continuous gravel and sand strips where in one place there was a broad channel and seven fathoms of water a year ago. Around the base of McCulloch Peak is a lagoon of hot salt water, steaming quietly and yellow with iron-stained mud. McCulloch Peak was 450 feet high at the time of our visit, conical in outline, with great lumps or horns of what appeared to be ledge rock jutting out from the upper slopes, and straight talus of bowlders all around the base, inclined at 30 degrees. The entire mass is steaming from many fissures, and in places there are bright yellow sulphur coatings at the steam vents. Metcalf Cone on the north side is really a half-cone, the south side being broken down to form McCulloch Peak. This rupture has left Metcalf with a vertical precipice on the McCulloch side and a cone slope still steaming on the north side. Neither Fire Island on the north nor old Bogoslof on the south is active at present. The steep cliff of Metcalf reveals in cross section a great horn of congealed lava, which has risen into the midst of the cone with a smooth curved surface toward the west, and at the top a broken vertical surface toward the east. Seen from the north, this horn looks like a shark's fin; seen from the west, like the horn of a rhinoceros. It is apparently the product of a mechanism identical with that which produced the extraordinary spine on Mont Pelée. This process is further elucidated by McCulloch Peak, its protuberances and its history. McCulloch Peak and Metcalf Cone are both products of the slow pushing up from beneath the waves of a mass of refractory lava, semi-solid, crusting and breaking into blocks as it rises, with only the central portions retaining a semblance of fluidity. The horns are doubtless such central portions.

The history of Bogoslof is epitomized in the accompanying six sketch maps. In 1796 old Bogoslof rose. In 1884 New Bogoslof (Fire Island) came into being, and the waves joined the two with bars. In the '90s open channels with probably ten fathoms of water were maintained between the islands and the sand spits changed their shapes. In 1891 New Bogoslof was still steaming. Between 1891 and 1895 New Bogoslof changed its form from a large irregular cone to a smaller flat-topped table. I believe this change was due (1) to its being levelled by the waves and covered with beach deposits, (2) to its being subsequently uplifted. Beach bowlders and sands can now be seen on its flat top and in section at the edge of the cliffs. In May, 1906, Metcalf Cone was reported by the "Albatross" midway between the old and New Bogoslofs. Lieutenant Stromberg, of the revenue cutter "Perry," in July, 1906, made a sketch map showing Metcalf Cone attached to New Bogoslof, but separated by seven fathoms of water from old Bogoslof. The revenue cutter "McCulloch" in July, 1907, found that Metcalf Cone had broken in two, extending itself into McCulloch Peak on the south, and that the waves had again cemented the breach between the islands with continuous land. When we reached the scene, conditions were as shown on the last map. But the end was not yet. On September 1, after we had left the islands, McCulloch Peak exploded, sand and dust fell one hundred miles to the eastward, and a visit by the revenue cutter in October revealed a watery lagoon at the south base of the Metcalf remnant, McCulloch Peak was gone, and all of the rocks were shrouded in a heavy mantle of volcanic débris. No such extraordinary story of the growth and alteration of an island in the sea in a history that has lasted one hundred and eleven years has ever been told in the records of science before, and the changes of the last sixteen months are unique in the annals of volcanology.

In the afternoon the landing parties returned to the ship, and a quick run was made with a fair wind to Makushin Harbor, arriving there at 8.15 P.M.

August 8 *to* 12.—During this period a camp was made at the head of the south-east arm of Anderson Bay with a view to more thorough exploration of the Shaler Mountains. Van Dyke and Sweeny climbed to the summit of the range, and discovered glaciers, a high mountain lake in a granite rock basin, and waterfalls tumbling from hanging valleys. Dr. Eakle explored the northern contact of the granite, and found it changing to diorite and unquestionably intrusive into the volcanic rocks. Gummere and Jaggar made a topographical survey of a remarkable series of elevated sea benches on the north side of the mountains. These benches extend along the walls of Anderson Bay, pitching downward to the north from an elevation of 415



MAPS OF BOGOSLOF VOLCANO, SHOWING GROWTH AND CHANGES FROM 1826 TO 1907

feet at the southern end of the bay, at such an angle that they would intersect the tide-water plane in a distance of eight or ten miles. This means that the centre of elevation whence they are tilted northward lies in the Shaler Mountains. That their original position was horizontal and at sea-level is clearly evidenced by the beach sand and well-rounded sea-worn bowlders still to be found strewn along the granite bench. This bench the quartz-laden waves at one time carved into the mountain's face. Unalaska is an earthquake land rapidly warping above the sea, and it is by small differential jerks that the granite range has been upheaved and the old shore lines tilted.

On Monday, the 12th, we sailed for Dutch Harbor, became becalmed in the rain during the evening, but later were favored by a strong breeze.

August 13 *to* 19.—On the morning of the 13th the expedition arrived at Dutch Harbor at 9.30. The following six days were occupied with repairs to the schooner preparatory to the voyage south and with securing information, statistical and otherwise, from the residents of Unalaska concerning many points which the western trip had rendered of interest.

Professor Eakle and Mr. Myers decided to take the sealing steamer "Homer," now due from the Pribilof Islands, bound for San Francisco. Accordingly, the remainder of the party regretfully took leave of them at Dutch Harbor; and at 7 P.M. on Monday, August 19, the "Lydia" set sail, bound east.

August 20–23.—After making a heavy night of it with a west gale, we anchored in Akutan Harbor at noon. Akutan is our last stopping-place. The harbor is at the south-east end of the island, and the active volcano unfortunately at the north end; but it was the hope of the party that by crossing the island and making one camp we might visit the crater. Here, again, all hopes were doomed to disappointment, owing to storm. The first day the wind blew so hard that Fred, one of the sailors, was blown away from the schooner in a dory, and could do nothing against the wind. We sent three men after him with the other dory, and even with such a force they were obliged to pull to land and work the boats up the shoal water of the shore until they were to windward of the schooner before they could venture out to return. All of this was *in a harbor*. Our anchor dragged considerably. Gardner, the pilot, was paid off and landed at this port. He did good service and had proved very useful in the islands.

On the second day, Wednesday, August 21, Van Dyke, Gummere, Sweeny, and the writer donned oilskins, braved the storm, and trudged across to Hot Springs Bay and Salmon River north of Akutan Harbor. Hot springs

were found in a valley bottom. The island consists of basalt and basic agglomerates. Some remarkable volcanic amphitheatres and cliff sections were seen. Salmon were found, in the river named for them, in such abundance that we speared them with geological pick hammers and sheath knives, and in some instances threw them out on the bank of the stream from the rippled shallows with our hands. They were poor food, with white flesh, and many of them diseased. The high mountains were all in clouds, cold rain fell, and it was useless to try to make the volcano.

The next day the storm continued unabated. Our time limit is up, and therefore the dories were taken inboard. The mountains are buried in clouds, so that it would be useless to make any further attempt to reach the crater. On shore there was an earthquake shock on this day, August 22, between 8 and 9 P.M. The thermometer here varies from 45 degrees to 48 degrees Fahrenheit.

On the 23d the storm abated, we sailed at 9.30 A.M., and obtained fine views of the great horizontally bedded agglomerate sections of Akutan and the dissected crater of Akun Head, as we passed through the strait between Akun and Akutan, and then stood off to the east for Unimak Pass and the Pacific. The last view we had of Akutan showed the mountains still fog-bound.

August 24 to September 11.—Eighteen days of fair and frequently strong winds took the schooner to Seattle over a straight course, with record-breaking daily runs in succession of 110, 160, 180, 140 miles, and a maximum of between 10 and 11 knots an hour on Friday, August 30.

I take this opportunity to express the gratitude of the expedition to Messrs. Applegate, Dirks, Harman, Gray, Schroter, Etner, Lewis, Bolshanin, and others for many courtesies extended to the party during our visits to Unalaska and Dutch Harbor. I am personally indebted to Captain Dunwoody and Dr. Ebert, of the revenue cutter "Perry," for information concerning their examination of Bogoslof in 1906. To Captain Applegate especially the expedition owes much for his timely advice and willing assistance in connection with innumerable details. I have to thank Captain Worth G. Ross, chief of the Revenue Cutter Service in Washington, for assistance and copies of useful reports on Bogoslof, and am further under obligations to Dr. L. A. Bauer of the Carnegie Institution, Mr. Walcott of the Smithsonian, Mr. Brooks of the Geological Survey, Messrs. Tittmann, Pratt, and Rhodes of the Coast Survey, Lieutenant Eben Barker of the Revenue Cutter Service, and many other friends in

AMONG THE LUPINES AND DEEP GRASSES OF THE UPLAND OF ATKA

SEA-WORN BOULDER ON ELEVATED BEACH, 415 FEET ABOVE SEA-LEVEL, ANDERSON BAY, UNALASKA

Boston, Washington, San Francisco, and Seattle, through whose effort the expedition profited. Not least are we indebted to the twenty-nine subscribers whose generosity made the expedition feasible.

To review briefly the scientific work of the expedition, it is safe to say that the geological records are fully equal to what was hoped for when the voyage was planned. To study the volcanoes Makushin and Bogoslof and find out something about the older rocks of the chain were the first requirements of success, and these things were abundantly accomplished. The photographs were unexpectedly successful, considering the weather. Large collections of specimens were made for laboratory study. The visit to Bogoslof at a critical time, the discovery of the Shaler Mountains, of the granite and the elevated beaches, the determination of the north and south belts throughout the chain, characterized respectively by active volcanoes and older rocks, the bench levels containing lignite at high elevations,—all of these things are large items of significance which appear from the field notes. What may develop from laboratory study remains to be determined.

Professor Eakle secured a good collection for petrographical and mineralogical study. Dr. Van Dyke collected between 1,200 and 1,300 specimens of plants which have been sent to the Gray Herbarium to be reported upon by Professor M. L. Fernald. The expedition is indebted to Mr. N. T. Kidder for means to make this collection. Dr. Van Dyke further collected a large number of insects which he will himself report upon, as he is a skilled entomologist. His check-lists recording the work of former entomologists in these islands show that he has greatly increased the known fauna. Professor Gummere secured magnetic data which will be of value. Messrs. Myers and Sweeny made good sketch maps in many places, and have undertaken a special study of the crater of Makushin, which will probably be the subject of their joint graduation thesis at the Massachusetts Institute of Technology. Mr. Colby's reports are not yet complete, and at the time of this writing he had not returned to Boston from Alaska. He has, however, sent interesting letters, describing economic features of interest on the Alaskan Peninsula, and several cases of specimens have been received from him.

To continue research in physical geology at the Institute, of which the work of this expedition is but a beginning, money is needed. Few people realize how much there is to study, from week to week and from month to month, in the perceptible movements in and on the earth's crust. Owners of yachts have an enviable opportunity to increase the store of the

world's useful knowledge. Unalaska, accessible by steamer, forty miles from Bogoslof, itself rising slowly from the sea, with accelerations occasionally which produce quakes, is an ideal place for a permanent observatory of such movements. Any man of scientific habit of mind will understand how valuable and illuminating a set of photographs of Bogoslof would be, for instance, which had been taken once a week from the same spot during the last twenty months. An anchored camera with a chronographic exposing device could be used for a hundred similar purposes if such an instrument were even invented. And this is only one of a hundred such instruments which ought to be invented and applied to the physics of the earth. For the founding of *geonomical* observatories—laboratories for the interpretation of *earth law*—there is much more need of money to-day than for astronomical observatories. Geonomy is an almost unexplored science. It is the science of experimenting upon our own earth to see what it is doing. And the first call upon men to foster such experimentation is the call of humanity. The cry of suffering multitudes, which led Pasteur on from ferments and silk-worm disease to hydrophobia, was no more heart-rending than the cry of the terrorized millions who live in earthquake and volcano lands. For volcanic eruptions we already know that there are premonitory symptoms. It is only a question of experiment to learn to recognize them positively and so assist governments to deport populations when necessary. Even with our present crude knowledge, it is safe to say that, if a geonomic observatory had existed in Martinique in 1902, the lives of the 30,000 people destroyed at St. Pierre might have been saved. It is not safe even to guess how much science has lost in not possessing local records of the months preceding that eruption. And, as for earthquakes, it is merely necessary to mention Charleston, Gifu, Calabria, Valparaiso, San Francisco, and Jamaica. The temperaments of whole populations are affected by them. No science can avert them, but science can construct buildings intelligently, provide against fire, show what places are relatively immune, what seasons are most dangerous. It can instruct the public so as to destroy superstition and ignorant exaggeration; it can bring about coöperation in recording important facts—the collection of facts is every day leading to possibilities of greater confidence and less fear; and it is much more probable that we will be able in time to predict earthquakes than it was probable fifty years ago that we would ever send wireless messages three thousand miles.

The immediate need of the Research Laboratory of Physical Geology at the Massachusetts Institute of Technology is for a first research associ-

ate who shall give his whole time to seismographic experimentation, and for money wherewith to house and provide for the seismograph. Money for the instrument has been given, and a modern seismograph has been ordered from Germany. A complete seismometrical observatory should have several instruments and keep in touch with other observatories at distant points. The observatory should be provided with standard time, and have the service of a machinist to improve and modify instruments as required. Mr. Rotch has kindly offered to allow the seismograph to be set up at the Blue Hill Observatory. This location is an excellent one, on bed-rock, and association with that observatory could not fail to be an advantage. It is the wish of the donors of the seismograph, the trustees of the Caroline A. R. Whitney estate, that a small library of seismology and an earthquake museum, with photographs and similar records of earthquake phenomena, be started in association with the instrumental plant.

To the several ends here outlined there is needed for a beginning an income of five or six thousand dollars a year. If one or several donors will give a fair proportion of this amount, perhaps the Corporation of the Institute will furnish the balance. It would be much more satisfactory if the entire amount were furnished from without, as an evidence on the part of the alumni and of the public that they appreciate the example of the Acting President and of the generous subscribers to this expedition, and the efforts of all those within the school who are striving to extend its range of productive research.

WHAT WILL THE CONGRESS DO?

Two bills of the greatest importance to the engineering interests of the country have been introduced at the present session of Congress, but they cannot pass unless engineers and others are willing to make their interest known in no uncertain manner.

House Bill No. 6122 provides for "the continuation [by the United States Geological Survey] of the investigations of the rivers and water resources of the United States." For the past twelve years the survey has been making investigations of the quantity, quality, and availability of surface and ground water throughout the United States. The results have been published regularly as Water Supply and Irrigation papers, and have been available for distribution and for reference throughout the country. These results are invaluable, not only to engineers interested in the development of water powers, hydro-electric or otherwise, but to every one concerned with the water supply for irrigation or other purposes. Last year the appropriation for this work was reduced from $200,000 to $100,000, barely escaping complete elimination on a legal technicality, and the amount of work performed has been proportionately reduced. As the value of such data as that on stream flow is largely determined by the length and continuousness of the record, it is most desirable that these investigations be resumed immediately.

A matter even more urgently demanding action is the acquisition of National Forests in the Southern Appalachian Mountains and in the White Mountains, as provided for in House Bill No. 10457. The forests which it is proposed to include are located at the headwaters of important streams of an interstate character. It is absolutely essential that these upper watersheds be protected from deforestation, if the water powers farther down stream are not to have their commercial value reduced to a mere fraction of what it is at present. In the words of the Secretary of Agriculture, "That [as a result of crude lumbering methods followed by forest fires] the two regions under consideration are advancing toward a condition of bar-

renness and sterility is the conclusion of every man who has had a part in this investigation. I do not refer to the loss merely of commercial timber. I mean absolute barrenness and sterility, without timber, without undergrowth, without soil." * Under these conditions the water storage capacity of the land as an equalizer of stream flow will be practically destroyed and periods of flood and drought will be enormously accentuated.

The government is spending millions of dollars annually in dredging out the channels of navigable rivers, while the rivers themselves are depositing more than an equivalent amount of sand and silt eroded from deforested mountain sides. Much less money expended in forestry work on the higher watersheds would largely prevent the erosion.

The effect on the water supply alone is sufficient to warrant the creation of these national forests, but from the standpoint of timber production they are also necessary. The country has already crossed the threshold of a hard-wood timber famine. "In the last seven years the hard-wood-lumber cut of the country has fallen off over 15 per cent. . . . During the same period the wholesale prices of all classes of hard-wood lumber advanced from 25 to 65 per cent." † According to the most liberal estimates the hard-wood supply of the country cannot last more than sixteen years. Although there are large National Forests in the West, having a total area of

* Senate Document No. 91. Report of the Secretary of Agriculture on the Southern Appalachian and White Mountain Watersheds, page 8: "In 1896 Professor N. S. Shaler, of Harvard University, said: 'South of Pennsylvania there is, according to my reckoning based on observations in every State in that upland country, an aggregate area of not less than three thousand square miles where the soil has been destroyed by the complete removal of the woods and the consequent passage of the earthy matter to the lowlands and to the sea. At the rate at which this process is now going on, the loss in arable and forestable land may fairly be reckoned at not less than 100 square miles per annum. In other words, we are each year losing to the uses of man, through unnecessary destruction, a productive capacity which may be estimated as sufficient to sustain a population of a thousand people.' This rate has not only been kept up, it has been greatly accelerated. Faster than was considered possible eleven years ago, these regions, through injudicious cutting, fires, clearing, and general misappropriation, are moving toward a forestless, soilless condition."

† *Idem*, page 9. This document can be obtained free from the Forest Service, Washington.

about 150,000,000 acres, these are composed almost exclusively of soft woods. There is at present no National Forest east of Arkansas, and the hard-wood land of the Lake States and Lower Mississippi Valley is ordinarily given over permanently to agriculture as soon as it is cleared. The Appalachian Mountains, therefore, will soon be the only large hard-wood area remaining in the entire country. Under government control, with forest fires almost entirely eliminated, the destruction of the younger growth in logging prevented, and a more complete utilization of the mature trees removed, the Appalachian region can be made to furnish annually a supply of hard-wood equal to the present consumption of the country. It may be of interest to point out that in the case of the State Forests of Prussia the introduction of improved methods of scientific forestry has increased the annual output per acre from twenty cubic feet in 1830 to sixty-five cubic feet in 1904. Under right methods of management an equal increase may be expected from Appalachian forests.

It will be seen, therefore, that both of these measures are of national importance. What will be the action of Congress? It is safe to say that it will be largely determined by the realization on the part of that body that the people are aroused to the necessity for the passage of these bills. Let every one, then, make his own feeling clear by personal letters to his representatives in Congress.

CHARLES H. PORTER '03.

GENERAL INSTITUTE NEWS

THE CORPORATION

A regular meeting of the Corporation was held at the Institute on the afternoon of Dec. 11, 1907. Acting President Noyes read his report, and Mr. Wigglesworth presented his final report as Treasurer of the Institute. Both documents, when printed, will be sent to all alumni of the Institute.

Memorial notices of Charles Merriam, Esq., and of Alexander S. Wheeler, Esq., were presented and adopted; and resolutions expressive of the gratitude of the Corporation for the many years of faithful service of Dr. Francis H. Williams, as Secretary, were adopted.

THE CATALOGUE

The Catalogue for the present year which has recently appeared shows numerous changes as compared with the previous issue. The most important of these are in connection with the extensive provision that has been made for Graduate Courses and Advanced Study. There have been prepared schedules of elective subjects suitable for the arrangement of advanced courses of study for graduates in all the different departments of the Institute, and in particular provision has been made by which graduates of colleges can arrange a course leading to the degree of Master of Science without being required to obtain first the Bachelor's degree. In connection with these courses many additional subjects of instruction of an advanced character are now offered for the first time.

Important alterations in the courses in Mechanical and Electrical Engineering and Naval Architecture are shown. These changes were rendered possible by a reduction in the requirement in Modern Languages, and the time thus set free has been devoted in part to literary subjects and the introduction of the study of Applied Me-

chanics at an earlier period in the course, and in part to the more thorough study of important engineering principles.

Announcement is made that applicants for admission in 1909 and thereafter must present satisfactory evidence of preparation in two electives instead of in one, as heretofore. The entire elective requirement may, however, be covered by a satisfactory examination in intermediate French or intermediate German.

Numerous changes in the instructing staff are indicated. During the past year 5 members of the Faculty have resigned and 13 new members have been appointed. The entire instructing staff now numbers 253.

In the Statistics of the Graduates, Doctors of Philosophy appear for the first time, this degree having been conferred last June upon three candidates. The total number of graduates of the Institute is now 3,887.

The Register of Students shows that the total number attending the Institute is now 1,415, a slight increase over last year. Relatively, the number of special students is considerably less than last year.

COURSE CHANGES

Changes in the schedule of studies of Course VI. have been adopted similar to those already adopted in Courses I., II., XI., and XIII., beginning Applied Mechanics in the second term of the second year, but, unlike the other courses, not omitting an entire year of modern language. This new plan provides for a course of two hours per week, during the first term, in Advanced French or German, each student to continue the language which he elected to take during the first year. It is hoped that by this method the students will become proficient in at least one of the modern languages. In the fourth year a number of optional subjects have been added. Thus in the first term 110 hours are to be given to some of the following: General Studies, Electrical Testing, Dynamo Design, and Central Stations; and in the second term 120 to 170 hours are to be given to some of these subjects: General Studies, Central Stations, Journal Meetings and Excursions,

Acoustics and Telephony, Telephone Engineering, Electric Railroads. Students are advised to select not less than seventy-five of these hours from General Studies (English, History, Economics, Modern Languages).

Elective subjects for graduate work in most of the professional departments have been adopted. As examples, in Course I. the major subjects are new courses in Structural Design; Railroad Engineering; Railroad Design; Hydraulic Design; Water Power, Irrigation and River Works; Purification of Water and Sewage; and Specifications and Contracts; and in Course II. the major subjects are: Advanced Theory of Elasticity; Analytic Mechanics; Advanced Machine Design; and Advanced Steam and Gas Engineering.

AN IMPORTANT PLAN

The Faculty has under consideration a proposed course in Electrical Engineering to be carried on in co-operation with the General Electric Company, the plan for which was suggested by a member of that company. A committee has been appointed by the Faculty, which has made a preliminary report suggesting a possible way in which such a course could be carried on, but recommending that the officers of the General Electric Company be asked to meet in conference with representatives of the Faculty to consider the matter further before the Faculty shall express a final opinion.

UNIVERSITY OF VIRGINIA

UNIVERSITY OF VIRGINIA,
Charlottesville,
Office of the President.

OCTOBER 24, 1907.

MRS. WILLIAM BARTON ROGERS,
Newport, R.I.

My dear Mrs. Rogers,—On the 15th of October I had the honor to propose the following resolution to the rector and visitors of the University of Virginia:—

Resolved, That the Chair of Economic Geology recently established at this University be designated the "William Barton Rogers Chair of Economic Geology," in recognition of the eminent and devoted services of William Barton Rogers to the University of Virginia.

It gives me great pleasure to inform you that this resolution was adopted unanimously and with great enthusiasm by the rector and visitors of the University of Virginia. The Chair of Economic Geology was established in the University last June. The first incumbent is Thomas Leonard Watson, who came to us from the Virginia Polytechnic Institute. He is a man of distinction and eminence in geological work in this country. We are hoping to induce the State to enter upon the work of the geological survey. If we can succeed in this effort, the work which your distinguished husband inaugurated will be carried to full completion.

I trust that the William Barton Rogers Chair of Economic Geology in this University will prove a source of unmeasured strength to the intellectual and economic development of the State.

Very sincerely,

(Signed) EDWIN A. ALDERMAN,
President.

INSTRUCTORS' CLUB

At the first meeting of the Instructors' Club about thirty-five members heard an interesting address by Dr. Charles Tenney, formerly president of the English College of North China at Tien Tsin. Dr. Tenney has done much toward interesting the Eastern people in technical education, and has been influential in sending Oriental students to the Institute.

The officers of the Instructors' Club elected for the ensuing year are: president, Arthur A. Blanchard, Ph.D., of the Chemical Department; vice-president, Daniel F. Comstock, S.B., of the Physics Department; secretary and treasurer, Chauncy C. Batchelor, A.B., of the English Department; executive committee, Walter H. James, S.B., of the Mechanical Engineering Department, and Ernest A. Mueler, A.M., of the Department of Mathematics.

NOTES BASED UPON THE ANNUAL REPORTS OF THE STANDING COMMITTEES OF THE FACULTY

Committee on Advanced Degrees and Fellowships

The work of the committee during the past year has consisted chiefly in the recommendation of fellowship awards to individual students pursuing advanced study, in the acceptance of candidates for advanced degrees and recommendations for such degrees, and in the arrangement of advanced courses of study.

Grants to the amount of $4,850 have been made for eight fellowships and four special grants, $2,250 of the amount being for graduate work at the Institute: the remainder was for two fellowships for work at Harvard and three for work abroad. Of these grants six were for work in Chemistry, two in Architecture, and one each in Physics, Electrical Engineering, and Mechanical Engineering.

During the past year three candidates were for the first time awarded the degree of Doctor of Philosophy. These men carried on investigations in the Research Laboratory of Physical Chemistry, and pursued advanced studies in Chemistry as major subjects and in Physics and Mathematics as minor subjects. Both oral and written examinations were held.

Advanced courses of study have been arranged for by the committee in almost all of the thirteen professional courses. The development of these courses consists in offering in the various departments a large number of new advanced subjects of instruction, and in the specification of such undergraduate subjects of instruction in allied sciences as will be accepted as part of a course of study for an advanced degree. The former class are designated as "major subjects" and the latter as "minor subjects," and more than one-half of the candidate's work must be of the former class. As this is thought to be an important development of the scope of the Institute's work, the list of major subjects to be offered as elective studies for the higher degrees by the departments at the beginning of the next school year is reproduced here:—

Civil Engineering.—A Thesis, Structural Design, Railroad Engineering, Railroad Design, Hydraulic Design, Water Power, Irrigation and River Works, Purification of Water and Sewage, Specifications and Contracts.

Mechanical Engineering.—Research, Advanced Theory of Elasticity, Analytical Mechanics, Advanced Machine Design, Advanced Steam and Gas Engineering.

Mining Engineering.—Research, Advanced Mining Engineering, Advanced Ore Dressing, Mining Plant Design, General Metallurgy (Lectures and Laboratory), Minor Metals, Metallurgical Calculations, Metallurgical Design, Advanced Economic Geology, Advanced Field Geology, Geology of the Igneous Rocks, Chemical Mineralogy and Geology, Advanced Petrography, Advanced Paleontology, Distillation of Fuels, Heat Measurement.

Architecture.—Advanced Architectural Design, Advanced Composition lectures, Advanced Architectural Design Thesis, Philosophy of Art lectures, European Civilization and Art (advanced course), Advanced Life Class, Composition and Decorative Design, Advanced Pen and Pencil Rendering, Advanced Constructive Design, Building Laws and Contracts, Æsthetics, Landscape Architecture lectures, Landscape Design, History and Archæology.

Chemistry.—Chemical Research, Research Reports, Advanced Theoretical Chemistry, Advanced Inorganic Chemistry, Advanced Industrial Chemistry, Qualitative Analysis of Rare Metals, Organic Qualitative Analysis, Recent Developments in Organic Chemistry, Free Energy and Chemical Equilibrium, Applications of Physical Chemistry to Inorganic Chemistry, Polarized Light and its Applications, or Radiation, given in alternate years.

Electrical Engineering.—Advanced Research, Alternating Currents, Electrical Engineering Laboratory, Advanced Dynamo Design, Design of Stations and Distribution of Systems, Advanced Electrical Testing, Electrical Engineering Seminar, Organization and Administration of Public Service Companies.

Biology.—Research, Epidemiology, Purification of Water and Sewage, Sewage Disposal Practice, Public Health Laboratory Practice, Dairy Bacteriology, Sanitation of Water Supplies, Sanitation of Houses and Public Buildings, Bacteriology of Fermentation Industries.

Physics.—Physical Research, Constitution of Matter in the Light of Recent Discovery, The Electromagnetic Theory of Light, Radiation, Polarized Light and its Applications, Applications of Thermodynamics to Chemical Problems, Advanced Theoretical Chemistry, Free Energy and Chemical Equilibrium, Applications of Physical Chemistry to Inorganic Chemistry, Hydrodynamics, Applications of Differential Equations to Mechanics.

Electro-Chemistry.—Research, Applied Electro-Chemistry, Special Problems, Applications of Thermodynamics to Chemical Problems, Advanced Industrial Chemistry, Advanced Inorganic Chemistry, Advanced Theoretical

Chemistry, Chemical Engineering (special problems), Alternating Currents (Advanced), Electrical Engineering Laboratory.

Chemical Engineering.—Research, Research Reports, Chemical Engineering (special problems), Advanced Inorganic Chemistry, Advanced Theoretical Chemistry, Qualitative Analysis of Rare Metals, Organic Qualitative Analysis, Recent Developments in Organic Chemistry, Applications of Thermodynamics to Chemical Problems.

Sanitary Engineering.—A Thesis, Structural Design, Sanitary and Hydraulic Design, Sanitary Statistics, Water Power, Irrigation and River Work, Sanitation of Water Supplies, Purification of Water and Sewage, Sewage Disposal Practice, Specifications and Contracts, Sanitation of Houses and Public Buildings.

COMMITTEE ON FIRST-YEAR STUDENTS

The chief work of this committee is the consideration and discussion of the records of the first-year students at the various examination periods; for this the committee meets at the end of each five weeks of the first and second term. Opinions of the teachers in the preparatory schools of these first-year students are frequently read to the committee during the discussion of the individual records, as well as those expressed by the Institute instructors of these students, and these are both considered in connection with the records. In cases seeming to require Faculty action it is usual to refer the students to the Dean before any serious action is taken. Students whose records are not very satisfactory and are not known to the Dean are frequently referred to him for friendly advice.

COMMITTEE ON SECOND-YEAR STUDENTS

This committee, like the Committee on First-year Students, meets at the end of each five weeks of the first and second term. This committee meets, however, at the opening of the first term, to consider requests made by new second-year students to be admitted to certain subjects which require a record of "P," or better, in certain of the major first-year subjects. Certain students who because of the Faculty requirements would be unable to continue second-year work, are thus allowed to continue this work provisionally, sometimes subject to an additional examination in January, and at other times subject to doing good work in these courses to which they are admitted provisionally.

COMMITTEE ON MILITARY EXERCISES

There seems to be a very gratifying disappearance of any tendency to disorder or misconduct, there being a general attitude in favor of discipline. The commissioned officers are all from the upper classes. They attend at their own request, and more applied than could be accepted.

At the target practice, which is a comparatively new feature of the work, there was an average attendance of thirty-five during October. There is also a rifle club with twenty or thirty members.

COMMITTEE ON PERIODICALS AND LIBRARIES

Nearly $2,000 per year is required for the subscriptions for periodicals for the libraries. One of the needs of the library which has been felt with the increased use of the general library is that of a fund for the purchase of books of a general character not properly appertaining to any special teaching department.

The Institute possesses three endowment funds for the library: the Charles Lewis Flint Fund, with an income of about $200 per year "for books and scientific publications"; the William Hale Kerr Fund, with an income of about $80 per year "for books and drawings for the Library of Machine Design"; and the Rotch Architectural Library Fund, with an income of $200 per year for the library or collection of the Department of Architecture. A gift of $1,000 was made during the past summer by the Saturday Club of Boston for the purchase of books.

At present each department has a separate departmental library, excepting the Departments of English Literature and Military Science, whose books are in the general library, and the Departments of Economics and History, whose books are in one collection. Also the Departments of Civil and Mechanical Engineering have their libraries united. It is suggested that a further union of some of these libraries would be advantageous. Thus, if the libraries of Civil, Mechanical, and Electrical Engineering and of Naval Architecture were united in one engineering library, it would avoid a considerable duplication of books and periodicals and make possible a greater efficiency of administration. Such a union of libraries would also be of much benefit to the students, as these branches of engineering are so closely allied that many of the subjects relating especially to one department are required for reference in some of the other departments.

During the past year the library has endeavored to have the Institute placed on the free list for the Publications of the Carnegie Institution, but

without success, so that the Institute is still obliged to purchase these publications except when they are supplied otherwise.

COMMITTEE ON PETITIONS

This standing committee meets at least once a week during each of the two terms, and oftener at the beginning of the terms. During the past school year 1,764 petitions have passed through the hands of this committee. Students are required to petition for all exceptions to the Faculty regulations which outline the prescribed courses and the requirements for admission to them.

COMMITTEE ON PROVISIONAL STUDENTS

Students who apparently cannot pursue the regular courses with profit, and whose records make it seem somewhat doubtful as to the wisdom of their being allowed to continue at the Institute, are referred from time to time to the Committee on Provisional Students. Also students who for one reason or another did not take the entrance examinations are likewise placed in charge of this committee, as well as all students who have been required to withdraw from the Institute and have, after a period of absence, been readmitted. This committee considers the cases of the students and outlines their plan of study.

COMMITTEE ON PUBLICATIONS

11,500 Catalogues, 4,500 President's Reports, 4,300 Registers of Graduates, and 4,500 Programs have been printed, and nearly all of them distributed. The Register of Graduates was sent this year to every graduate, and it is expected that this practice will be followed in every third year.

The *Architectural Record* recently established by the Department of Architecture, though not in charge of the committee, should be referred to as an important addition to the publications of the Institute.

COMMITTEE ON THE RECOMMENDATION OF GRADUATES FOR APPOINTMENT

The business of the committee has been transacted by the members individually under the general direction of the chairman, and a large number of recommendations for appointment have been made. The work of the committee has been of great assistance to many of our graduates, and is being more and more highly appreciated by them.

COMMITTEE ON SUMMER READING

It is believed that the course in Summer Reading was made more valuable and attractive when, three years ago, the plan was adopted of allowing each student to select the books that he preferred to read from a list containing a much larger number, in place of the plan of requiring specified books to be read.

The lists of books for the first-year and for the second-year students are given herewith. At the left of each title is a number showing the credit allowed for each book, each student being expected to read carefully as many books as will give a total credit of at least 100 points, and at the right is a number showing how many students during the past three years have elected to read each book.

First-year List

History

10.	Froude, J. A. English Seamen in the Sixteenth Century . . .	138
25.	Fiske, John. American Revolution	173
5.	De Quincey, T. Joan of Arc	112
15.	Parkman, Francis. The Oregon Trail	405
5.	Macaulay, T. B. England in 1685	131
15.	De Ségur. La Retraite de Moscou (in French)	21

Fiction

10.	Dickens, Charles. A Tale of Two Cities	420
20.	Eliot, George. Romola	417
10.	Stevenson, R. L. Kidnapped	442
15.	Bulwer-Lytton, E. L. The Last Days of Pompeii	429
15.	Scott, Walter. Quentin Durward	396
15.	Zschokke. Das Abenteuer einer Neujahrsnacht (in German) . .	29

Poetry

10.	Shakespeare, W. Othello	483
10.	Shakespeare, W. Julius Cæsar	551
10.	Palgrave, F. T. The Golden Treasury. Selections	128
10.	Henley, W. E. Lyra Heroica. Selections	28
5.	Scott, Walter. Lady of the Lake	413
5.	Scott, Walter. Lay of the Last Minstrel	264
5.	Whittier, J. G. Poems. Selections	208

Science

20. Tylor, E. B. Anthropology: An Introduction to the Study of Man and Civilization 156
15. Newcomb, Simon. Astronomy for Everybody 177
10. Frankland, Mrs. P. Bacteria in Daily Life 91

SECOND-YEAR LIST

History

15. Fiske, John. The Critical Period of American History 245
25. Parkman, Francis. Montcalm and Wolfe (2 vols.) 144
10. Mombert, J. I. A Short History of the Crusades 74
10. Smith, Goldwin. Three English Statesmen 52
50. Motley, J. L. The Rise of the Dutch Republic (3 vols.) . . . 125

Fiction

10. Hawthorne, Nathaniel. The House of the Seven Gables . . . 401
20. Scott, Walter. The Heart of Midlothian 420
20. Thackeray, W. M. Henry Esmond 400
20. Reade, Charles. The Cloister and the Hearth / Kingsley, Charles. Westward Ho! . . . . . *or* 430
15. Balzac. Cinq Scènes de la Comédie Humaine (in French) . . 21
15. Goethe. Sesenheim (in German) 22
15. Alarcón. El Capitán Veneno (in Spanish) 7

Poetry

10. Shakespeare, W. Hamlet 509
10. Shakespeare, W. Twelfth Night 462
10. Bryant, W. C. Certain books of Homer's Iliad 130
10. Repplier. A Book of Famous Verse. Selections 97
5. Pope, Alexander. Essay on Man 241
5. Longfellow, H. W. Poems. Selections 277
5. Macaulay, T. B. Lays of Ancient Rome 208

Science

15. Newcomb, Simon. Astronomy for Everybody 203
10. Marshall, A. M. Lectures on the Darwinian Theory 177
5. Tyndall, John. Faraday as a Discoverer 115

COMMITTEE ON THE RELATIONS OF SECONDARY SCHOOLS

To this committee are usually referred only those matters dealing with a larger and broader aspect of the relations of the Institute with secondary schools, as the special questions are referred to certain administrative officers or to other Faculty committees.

In recent years the committee has especially co-operated in the holding of meetings of secondary teachers here at the Institute,—meetings which have been mutually profitable in making personal acquaintance and in reaching a better understanding concerning the expectations of the Institute and the ability of the schools to meet those expectations.

The present Faculty Committee is well constituted in view of the fact that several of its members have been members of school committees and almost all are members of one or more teachers' associations to which preparatory school teachers belong. The majority are likewise members of the Faculty Committee on Entrance Examinations; and, on account of a considerable amount of school visiting which some of the members have done, a wide and reasonably accurate knowledge of the secondary schools is possessed by the committee.

COMMITTEE ON UNDERGRADUATE SCHOLARSHIPS

The total number of students assisted from the Institute funds during the past year was 158, and the amount awarded was $18,562.50. In addition to this the State aided 65 students, 45 of whom were not aided by any Institute grant. The total number of students, therefore, in the Institute receiving aid either from Institute funds or from State grants was 203, and, on the basis of 1,397 students registered at the Institute for the year, the ratio of students receiving aid was about 1 to 7.

Institute awards are not made until the Scholarship Committee has carefully considered the applicant's need and scholarship. A regular blank is filed by the applicant, and an appointment is made for him to meet at least one or two members of the committee, of whom one is generally the chairman. These conferences usually last from eight to fifteen minutes, except for students whose cases have been previously studied.

At the end of each term the records of all applicants for scholarship aid are reviewed, and an estimate of the average grade of scholarship of each is presented to the Scholarship Committee, together with the results of the individual conferences and the correspondence submitted by those persons to whom each applicant refers. Only students who are needy and also

have records which indicate that they will graduate are granted scholarship assistance.

Awards are, in general, made for the whole year, five-eighths of the award being applicable to the first term. At the end of the first term the records of the students recommended for awards are reviewed, and those whose records have fallen below the standard required by the Scholarship Committee forfeit that part of their award which was to have been applied to the second term. Also students whose scholarship does not reach the standard required are recommended at the opening of the year for second-term assistance, subject to their obtaining during the first term a better record than their present one.

It is not the custom of the committee to make grants to first-year students. Only in exceptional cases is this rule departed from, awards being occasionally made for the second term of the first year, depending on the first term's record. This restriction concerning first-year students does not apply, however, to State awards.

During the summer, applications for State scholarships are submitted by the State Board of Education to the committee for advice and recommendations. At the meeting last summer for this purpose 151 such applications were considered. The recommendations of the committee are followed in by far the larger number of cases.

DEPARTMENT NOTES

MINING ENGINEERING

The fourth-year laboratory list contains 24 students, the third-year mining list contains 29, the second-year class in elementary mining contains 52. While the fourth year is a little smaller than it has been for the last two or three years, the classes will average up fully to the numbers we have been having lately.

The hard times are being felt to some extent by our graduates. A few have written asking for places. Some men are taking advantage of the hard times to get a little vacation which they have not had in the recent rush times.

Among former students who have called at the Institute recently are R. H. Sweetser, who is changing from Sault Ste. Marie to Columbus, Ohio; Mr. W. A. Sheldon called, his establishment

having shut down; Mr. R. B. Williams has just returned from a three years' service in Ecuador; Mr. A. F. Bennett is on a vacation from Mexico; Mr. T. F. Geraghty has come home for a vacation from Chicago; Mr. A. W. Tucker has been in Boston on company business; Mr. Moses Brown, Jr., is in Boston on a vacation; Mr. A. H. B. Arnold and Mr. F. F. Colcord are on vacations.

In regard to the apparatus in the Mining Department there have been recently added two new pulsator classifiers, one new pulsator jig; there is in contemplation a Johnston vanner; there has been installed recently a new Wilfley table top with certain improvements; and a new Hansell jig and two new compressors have been added to the plant.

In the direction of furnace work and metallography, in the blast furnace and reverberatory work, measurements of temperature and analyses of gases have been introduced for the making of complete computation of heat developed and the distribution of heat, and a new Friedrich gas reverberatory furnace, a new Heraeus electric resistance tube furnace, and a new Siemens millivoltmeter have been added.

CHEMISTRY AND CHEMICAL ENGINEERING

The number of students taking chemical subjects this year is nearly the same as last. The laboratories of inorganic chemistry are not filled to their capacity this term, but will be more nearly so next term, as it is then desirable to assign extra desk space to students who are making inorganic preparations. This course, introduced for the first time last term, has apparently been most successful as a preparation for later work. The experiences of last year will make possible some improvements in details this year.

The laboratories of analytical chemistry are just completely filled this year, some of the desks being occupied, however, by the chemical engineers who are taking organic chemistry. The problem of providing for all the students in organic and in analytical chemistry for next year is already occasioning some perplexity.

Among the new members of the instructing staff this year are graduates from other institutions, as follows: from the University

of Toronto and the University at Heidelberg, Dr. E. B. Spear; from the University of Minnesota, Mr. W. W. Kennedy; from Clark College, Mr. C. B. Nickerson; the Institute and Göttingen University, Dr. R. S. Williams; and from North-western University and the Institute, Mr. C. R. Bragdon. Mr. R. C. Tolman has also spent considerable time in study at German technical schools and in research work at the Institute.

Dr. Fjeld Halvorsen, of the University of Christiania, is spending this term at the Institute for the study of methods of instruction, particularly in industrial chemistry. He is taking the full work of the courses in Industrial Chemistry, lectures and laboratory, and in Proximate Technical Analysis, and is a visitor at other classes. He was for three years assistant to Professor Liebemann at Charlottenburg, Germany, and has charge of the instruction in technical chemistry at his home university, from which he has leave of absence for this study in American institutions.

Dr. Wilhelm Mastowitch, of the Technical Institute for Mining Engineering at Tomsk, Siberia, who is spending some weeks at the Institute for purposes similar to those of Dr. Halvorsen, but with reference to the Mining Department, is carrying on an investigation on the decomposition of pure calcium sulphate, and is preparing his material in the Chemical Department.

Within the past year Dr. Gill has introduced a card system of accounting, both for supplies and for the distribution of these to students and instructors, which will much diminish the labor of making up accounts at the close of the year, and which also facilitates inspection of accounts by students. Considerable additions have been made to the stock of platinum, especially crucibles, and it is hoped that it will now be possible to loan crucibles more generally and to lessen the burden of expense imposed by the purchase of platinum at the prices which have recently prevailed. This can be arranged under conditions which will also insure a proper return to the Institute for the capital invested.

Mr. George W. Rolfe has been granted leave of absence for the remainder of the year, and has gone to Porto Rico for the season.

Dr. Gill has just issued an interesting little volume on Engine-

room Chemistry, in which the subject is presented in easily understandable form. It is published by Hill Publishing Company, New York.

Dr. Gill has been appointed a member of the Committee on Oil Analysis of the International Congress of Applied Chemistry; and Dr. Talbot has been made a member of a similar International Committee on Chemical Analysis, which is primarily expected to consider questions of uniformity of analytical procedure in analyses of technical importance.

Professor Walker has been elected one of the alumni members of the board of trustees of Pennsylvania State College, and recently attended an important meeting of the board, at which a president of the college was elected. He has been called to Chicago several times during the fall and winter as expert in an important patent suit.

Professor Whitney has been seriously ill and confined to the hospital for some weeks, but is fortunately now regaining his health. Dr. Fay has been obliged to spend considerable time at his home on account of the illness and death of his father, a highly respected physician of Altoona, Pa.

Messrs. H. E. Batsford and J. A. Christie, the students who completed respectively the second and first terms of the summer course in Applied Chemistry at the works of Harrison Brothers & Co. at Philadelphia, mentioned in the REVIEW, report a most pleasant and profitable summer.

ELECTRICAL ENGINEERING DEPARTMENT

The modifications of Course VI. which were briefly described in the July number of the TECHNOLOGY REVIEW were last spring referred by the Faculty to its Committee on Courses of Instruction. This committee made some modifications in the details of the arrangement and then recommended the adoption of the plan. The modifications have recently been acted upon by the Faculty and adopted in accordance with the recommendation of the Committee on Instruction, and the modified course will go into effect this year with the second-year students, beginning with the

second term. Next year the third-year students will gain the advantage of the improvements in the course.

In addition to the modifications of the undergraduate course introduced for the reasons described in the July number of the REVIEW, it has seemed desirable to alter and improve the plan of instruction for graduate students in the department, and the alterations have been adopted by the Faculty and will be found published in the recently issued Catalogue. In this adopted plan the students who are working for a Master's degree are thrown very distinctly upon their own resources for the purpose of developing their initiative and executive sense, as far as this may be possible in a year or two of advanced work; but the study will receive suitable direction by the teachers of the department. The study directed by the department will include an adequate thesis worked out by each of these graduate students, which deals with some subject selected with a view to testing and developing the student's initiative, resourcefulness, and executive capacity. Besides the thesis it is planned that each student shall follow at least one major course of advanced theoretical lectures and one or two minor courses, and that he shall also attend a seminar for the purpose of studying the trend of contemporary advance in electrical engineering and the relations of this trend to the historical development of the art.

Professor Clifford has developed his advanced lectures on alternating current phenomena to meet the conditions of this plan, and appropriate courses of an advanced nature are also offered by Professor Laws in electrical testing, by Professor Shaad in design of power stations and distribution systems, by Professor Lawrence in electrical engineering laboratory, and by Professor Derr in dynamo design. Professor Smith gives a course in which the field of electrical engineering is surveyed in a manner appropriate for the graduate students in Courses III. and V.

It has seemed in this connection desirable that lectures upon the organization and administration of public service companies should be made available to students. The duties of the numerous engineers who are employed by electric light, electric railway,

and telephone operating companies, have come to have so much to do with the administrative affairs of these corporations controlling public utilities that suitable lectures on the public relations of the companies may be of great service. For this reason graduate study of the organization and administration of public service corporations is provided for by lectures by Professor Jackson, which are to be accompanied by extensive assigned reading and the examination of operating records. The lectures will treat of the relations of public service companies to the government and to the people. They will also treat of the methods of organizing public service companies, the legitimate expenses entering into the cost of their organization, the management of the companies viewed especially from the commercial aspect, and the legitimate functions of such companies. An interesting and very desirable feature of this course of study lies in the fact that certain aspects of the subject will be treated by the Department of Economics with the object of giving the students a clear view of the requirements of public interest.

In connection with the meetings of the Electrical Engineering Society, which consists of third and fourth year students in Course VI., it has heretofore been the practice of the society to have meetings once a month at some of which students take a part, describing experiences of their own or the result of their travels, and at other meetings alumni or others of moment living in Boston or its vicinity have given technical lectures upon various matters of engineering practice. It has seemed desirable to add to this the advantages which may be derived by sociably dining several times a year, and for this purpose the department has planned several simple dinners for the society to be held at the Tech Union. The generosity of certain alumni has made this possible, as the department funds are not sufficient to warrant the expense and it did not seem desirable to call upon the students for the expenditure. At each dinner it is planned to have, as the special guest of the society, some engineer of distinction who will dine with the society (singing college songs and becoming acquainted with the members during the dinner), and who will then speak to the mem-

bers for forty or fifty minutes in regard to the life of the practising engineer. These speakers are expected to avoid matters of purely technical interest, and are supposed to confine their remarks to incidents in the life of the professional engineer and a discussion of his sphere of influence.

One of these dinners was held during the latter part of the second term of last year, and Mr. Frederick P. Fish was the special guest of the society at that dinner. Another dinner was held on the evening of December 5, and Mr. H. G. Stott, president of the American Institute of Electrical Engineers, was the special guest for that evening. In each instance the occasion has been one of much satisfaction and good fellowship, and it is to be hoped that funds for continuing these affairs will be made permanently available. Approximately $300 a year is required for the purposes.

Professor Clifford returned from his European trip on November 12, very much refreshed.

The "Standard Handbook for Electrical Engineers," of which Professor Shaad wrote one section, has recently been issued.

THE RESEARCH LABORATORY OF PHYSICAL CHEMISTRY

This laboratory opened on September 1 for its fifth year. Professor G. N. Lewis has been appointed acting director of the laboratory in place of Professor A. A. Noyes, who is temporarily acting as President of the Institute. Investigations are being carried on in the laboratory by sixteen men, of whom ten are devoting their whole time to research work. The new members of the research staff are Professor Carl von Ende (Ph.D., Göttingen), Mr. John Johnston (B.Sc., St. Andrews), and Mr. Roger D. Gale (S.B., Massachusetts Institute of Technology). Mr. R. B. Arnold (S.B., Rose Polytechnic Institute) enters as a candidate for the degree of Doctor of Philosophy.

As in the past, a considerable part of the research work bears upon the problems of conductivity in aqueous solutions at high temperatures. The results of the numerous investigations in this field, which have already been completed in this laboratory, have

recently appeared in a comprehensive memoir published by the Carnegie Institution. A new form of conductivity bomb, capable of withstanding very high pressures, has recently been constructed. In this bomb the vapor pressure, density, and compressibility of water up to the critical point are being studied, as well as the influence of pressure upon the electrical conductivity of solutions. Closely allied investigations are being made upon electrical transference in mixed salt solutions, the solubility of salts in water at high temperatures, and the dielectric constant of water up to its critical point.

In another field of investigation which is receiving special attention in this laboratory several investigations are under way. These are directed towards the determination of the common electrode potentials and of the free energy of important chemical reactions. Indirectly, but vitally connected with these researches is an investigation of the specific heat of gases at very high temperatures, which is now being undertaken by Professor H. M. Goodwin and Dr. H. T. Kalmus.

The general scheme of qualitative analysis developed by Professor A. A. Noyes and Dr. W. C. Bray is being extended to include the detection of the acids. Other investigations begun in previous years on the hydration and the true transference numbers of the ions, on the electromotive force produced in a solution by rotating it at a very high rate of speed, and on the properties of the solutions of metals in liquid ammonia, are being brought to a successful conclusion. Mr. C. A. Kraus, who is carrying on the last-named investigation, has succeeded in finding the missing link between the metallic and the electrolytic conductor, and has thus obtained a new point of attack for the problem of the electron.

During the past year a gift of $500 has been received from the William E. Hale Research Fund and one of $3,000 from a private source in support of the work of the laboratory. In addition, Professor A. A. Noyes has received a grant of $2,000 from the Carnegie Institution for assistance in carrying on the researches above referred to on the conductivity of aqueous solutions.

The Teachers' School of Science, established by the Lowell Institute of Boston, offers this winter, as a new departure, a course

of fifteen lectures to teachers on the fundamental principles of physical chemistry, discussed with special reference to their application in the teaching of elementary science.

The lectures are given by Professor G. N. Lewis on Saturday forenoons, and are attended by about sixty members of the New England Association of Chemistry Teachers.

SERIAL PUBLICATIONS OF THE RESEARCH LABORATORY, 1907

No. 15. "The Specific Heat of Solids at Constant Volume, and the Law of Dulong and Petit." By G. N. Lewis. *Journal of the American Chemical Society*, vol. xxix. pp. 1165–1168, 1907.

No. 16. "On the Density, Electrical Conductivity, and Viscosity of Fused Salts and their Mixtures." By H. M. Goodwin and R. D. Mailey. *Physical Review*, December, 1907.

No. 17. "Outlines of a New System of Thermodynamic Chemistry." By G. N. Lewis. *Proceedings of the American Academy of Arts and Sciences*, vol. xliii. pp. 259–293, 1907.

No. 18. "Solutions of Metals in Non-metallic Solvents." I. General Properties of Solutions of Metals in Liquid Ammonia. By C. A. Kraus. *Journal of the American Chemical Society*, vol. xxix. pp. 1557–1570, 1907.

No. 19. "The Electrical Conductivity of Aqueous Solutions." *Publications of the Carnegie Institution of Washington*, No. 63, pp. 1–352, 1907. Part I., by A. A. Noyes; Part II., by A. A. Noyes and W. D. Coolidge; Part III., by W. D. Coolidge; Part IV., by A. A. Noyes and A. C. Melcher; Part V., by A. A. Noyes and H. C. Cooper; Part VI., by A. A. Noyes and Y. Kato; Part VII., by R. B. Sosman; Part VIII., by A. A. Noyes and G. W. Eastman; Part IX., by C. W. Kanolt; Part X., by W. Böttger; Part XI., by A. A. Noyes and Y. Kato; Part XII., by A. A. Noyes.

OTHER PUBLICATIONS OF THE RESEARCH STAFF

C. L. von Ende, a translation of Abegg's "The Electrolytic Dissociation Theory." John Wiley & Sons, New York, 1907.

C. L. von Ende (with K. E. Guthe), "Standard Cells." *Physical Review*, vol. xxiv. pp. 214–221, 1907.

DEPARTMENT OF GEOLOGY

Changes of *personnel* in the teaching staff of the Department of Geology have been numerous in 1907. After over thirty years of successful teaching Professor W. O. Crosby was the first professor of the Institute to accept retirement under the Carnegie Foundation. He now is enabled to give all of his time to independent research, while retaining his office in the department. Assistant Professor D. W. Johnson resigned his position, owing to the demands of his work at Harvard University. Dr. R. A. Daly has been appointed to a newly established professorship of physical geology. Professor J. F. Kemp of Columbia University has accepted the position of Lecturer in Economic Geology for 1907–08, and will direct the advanced courses formerly given by Professor Crosby. Mr. de Steiguer, assistant, was obliged to go west in March, and he was succeeded for the spring months by Mr. William G. Ball (M. I. T. '05) and for 1907–08 by Mr. C. H. Clapp, of the same class.

Two students took the Bachelor's degree in Science in Course XII. in 1907. The number of enrolments in courses under the department for 1906–07 was 847, an increase of 24 over 1905–06. New graduate courses of research, partly for the S.M. degree, have been established in Geology of the Igneous Rocks, Advanced Field Geology, Advanced Economic Geology, Chemical Geology and Mineralogy, and Advanced Paleontology.

Through the kindness of the trustees of the Caroline A. R. Whitney estate the department will receive a sum of money for the purchase of a modern seismograph wherewith to register the vibrations of earthquakes. The instrument has been ordered, and will be mounted in a suitable locality near Boston. This gift marks the foundation of a research laboratory of physical geology. In the spring of 1907 thirteen thousand dollars was raised by subscription from twenty-eight individuals and corporations, to equip an expedition for the exploration of the Aleutian Islands, under the auspices of the department. This expedition was led by Professor Jaggar, and investigations were carried on for four months. Travel

was by sailing-schooner, starting from Seattle May 20, 1907, and returning to the same port on September 11. The economic resources, minerals, rocks, insects, plants, and physical features of the islands were studied, and collections brought back for investigation by specialists. This expedition marks a further advance toward the foundation of a research laboratory, one of the functions of which should be exploration of volcanic and seismic lands. A fund of five thousand dollars per year for five or ten years is needed to start the work of this laboratory and to maintain research assistants. It is hoped that eventually money will be provided to build a geophysical observatory.

On Oct. 1, 1907, Professor Daly assumed his duties at the Institute, having resigned his position as geologist for Canada on the International Boundary Commission. The change was made on the understanding that the completion of his report for the commission should hold first place among projects for his research work in the laboratories of this department. This final report will summarize the results of field and laboratory work of seven consecutive years which have been spent on the geology of the western Cordillera where it is crossed by the 49th parallel of latitude. The work is being carried on for the Canadian government. To facilitate the preparation of the report, Dr. W. F. King, the Canadian commissioner, has generously permitted the entire rock collection made during the boundary survey to be deposited in the Institute laboratory. The collection consists of about two thousand specimens, representing practically all the formations occurring on the 49th parallel between the Pacific and the Great Plains. Dr. King has also loaned from his government department a number of valuable instruments which will be used in the study of the rock collection. Among these is a large model Fuess petrographic microscope, provided with an unusually complete amount of accessory apparatus. As at present planned, the report will consist of a volume of text and an atlas of about thirty large plates. It is expected that its completion will occupy another year of more or less consecutive work.

During the past summer the mineralogical and petrographical

collections received many specimens, in part collected by members of the instructing staff and in part gifts from graduates and friends of the Institute. A fine suite of specimens illustrating the minerals and ores of Cobalt, Ont., and Butte, Mont., are perhaps the most important of these additions. Over two tons of specimens have been received. Such gifts are encouraging to the department, for they indicate a real interest on the part of graduates and friends, and not only make unnecessary the purchase of material from dealers at an exorbitant figure, but furnish specimens better adapted for use in the practical instruction of mining students. To the equipment of the mineralogical and petrographical laboratory has been added a large-sized polarizing microscope. This instrument is especially designed for refined work in mineralogical and petrographical research, and is a distinct addition to the research equipment of the department. Eventually several special attachments will be added to this microscope.

During the vacation Assistant Professor Warren made two collecting trips to points of interest in New York State and Nova Scotia. He was also engaged in various pieces of professional work. Two papers were completed by him during the summer: one a "Study of the Mineralogy and Petrography of Iron Mine Hill, Cumberland, R.I.," which has appeared in the January number of the *American Journal of Science;* the other a shorter paper on "Occurrence of the Rare Mineral Species, Hortonblite, at Cumberland, R.I.," to appear in the January number of the *Zeitschrift für Krystallographie und Mineralogie.* A third paper is practically completed on the "Metamorphism of the Cumberland Gabbro." This will, however, not be published until later. The class in mineralogy of the present year numbers approximately seventy-five men. The sections of this class for entirely successful work in a subject like mineralogy are too large unless two instructors are present. At the present time the assistant can devote only a small portion of his time to mineralogy, and it is recommended that an additional assistant, or possibly an instructor, be appointed in the future to co-operate in the instruction in mineralogy. The same man would be available and very serviceable in the petrographical

laboratory. Professor Warren considers it desirable to increase the available funds of the department to such an extent as to permit of the giving of a summer school in geology, mineralogy, and lithology. It is also to be hoped that some way may be found to provide a permanent fund, the income of which might be used for defraying the expenses of such students as are unable to go from lack of funds. The advantages of summer school work of this kind cannot be too strongly emphasized. It is a matter of great importance to the economy of time during the winter semesters that such subjects as geology, surveying, and mining become required summer studies. If this were done in the Institute, much of the overcrowding of courses in the third and fourth year would be avoided.

Among the gifts of fossil collections received by the department during the past year Dr. Shimer wishes to acknowledge especially the large collection of tertiary shells from Plum Point, Md., given by Mr. Fred L. Franks, a former student of the Institute. Another gift by the Philadelphia Academy of Sciences consists largely of lower tertiary forms. These collections fill a gap in the index fossil series, and also give material for research to graduate or fifth-year students. The book cataloguing of the fossils of the department is almost complete and will soon be transferred to a card system for greater convenience in use. This will be an important aid to both instructors and students. A portion of the past summer Dr. Shimer spent in giving two courses in the Yale University Summer School.

Dr. Loughlin has assumed charge of the courses in third-year field-work and building stones, and will co-operate with Professor Kemp in the advanced courses in Economic Geology. He is, this year, giving a course in General Geology at Tufts College in place of Professor J. S. Kingsley, who is on a year's leave of absence. Owing to increase of duties, he has resigned his position as compiler of foreign bibliography for *Economic Geology* to Mr. C. H. Clapp.

Mr. Charles H. Clapp, assistant for the year 1907–08, comes from North Dakota, where he has been since graduation, holding

the positions of Assistant State Geologist and Instructor of Mining and Geology in the State University.

MODERN LANGUAGES

Another reduction has been made in the Modern Language requirements for graduation. Students of Course VI., instead of taking a year of Intermediate French and a year of Intermediate German, will hereafter take only a year and a half of one of these subjects. The last half-year's course will comprise only two recitations a week instead of three comprised in the regular term. The undergraduate courses which up to date have reduced their requirements in Modern Languages are the 1st, 2d, 6th, 11th, and 13th.

DEPARTMENT OF ENGLISH

The English Department has extended, as far as time and money now allow, the system of frequent conference which it has always emphasized as essential for effective instruction. Each student in the first year is required to talk over his work with his instructor at least once in each period of five weeks; and in these conferences much can be made clear, questions may be asked and difficulties explained that can be treated in written criticism only indirectly or not at all. Conferences with second-year students at the same intervals afford opportunity to speak personally of such portions of the lectures as may seem to each student specially difficult or interesting, and to discuss the required readings and effective or ineffective ways of reading literature. To the student who desires help, conferences afford the best aid; to the teacher they afford opportunity for personal knowledge and for personal testing.

The inequalities of capacity among Freshmen, due largely to different degrees of efficiency in their preparatory schools, make difficult all instruction in large classes, wherein a portion must be delayed and a portion unduly hurried for the sake of the average. The Freshman Class in English was this year divided, on the basis of the entrance examination and two special tests, into three layers, —a stratification carried out in every section. All the students must

alike develop to an acceptable degree their capacity of written expression, but this division enables the better pupils to go further and the poorer to receive more and better adjusted assistance than under the old system.

A further step of adjustment is the formation of a special class, meeting at four o'clock, for pupils required to repeat first-year English. By this arrangement their Sophomore tabular view is not dislocated by the necessity of sacrificing some second-year subject to the hour assignments of Freshmen sections, and they may be treated as a special class.

The extra hours available for second-year English in several of the courses have been given to fuller treatment of earlier English literature, particularly to the period of Elizabeth and to fuller illustration of the lectures by required readings. Students read an entire play of Shakespeare ("Othello" or "Hamlet" in different sections), which is discussed fully in class.

The composition work done in the second year is also proving its value. In each term each member of the class is required to write a long theme, the purpose of which is to give him practice in handling abstract ideas in expository or argumentative fashion. In conference this theme is carefully gone over, particular attention being paid to its qualities as a piece of thinking, and then the student is required to rewrite it. By this training he is helped to see that precise and logical thinking is as necessary in his English work as in his scientific studies proper.

Mr. Allen French (Course IX., '92) is the first Institute graduate to be added to the department. He has had practical experience of literary work for periodicals and in published books.

DEPARTMENT OF DRAWING

A meeting of all the instructors in the Department of Drawing was held in the President's office on Wednesday, October 23. This was the first meeting of these instructors as members of a department, and was brought about in accordance with a recent recommendation of the Faculty. Meetings of the instructors have now been arranged for each month of the school year, to consider

questions relating to the instruction in Mechanical Drawing and Descriptive Geometry. The *personnel* of the department is of such character that the discussion of educational subjects is likely to be profitable.

During the summer Professor Adams has published a new and enlarged edition of the first part of his Descriptive Geometry, and is now engaged in the preparation of a second part which will be brought out before the end of the school year.

The changes in the instructing corps this year are the appointment of Mr. S. E. Gideon as full-time instructor and the appointment of Mr. J. Mills as half-time instructor. Mr. Mills comes to us from Western Reserve University, where he developed a course in Mechanical Drawing and Descriptive Geometry. Mr. Mills is a graduate of the University of Chicago, and received the degree of A.M. from the University of Nebraska in 1904.

DEPARTMENT OF MATHEMATICS

Professor Woods has represented the department at the recent conference of mathematicians and engineers at Chicago. This conference had been carefully planned by the Chicago section of the American Mathematical Society, the program having been in course of development for more than a year. There is a salutary general tendency abroad, as well as in this country, to adapt mathematical instruction more and more closely to the needs of the students of applied science, avoiding on the one hand such discussions of abstract mathematical theory as are appropriate for specialists and on the other hand a short-sighted subordination of fundamental principles of technical facility. This disposition is exemplified in England and in this country particularly by a larger use of concrete applications as an essential part of mathematical instruction and by the more or less complete breaking down of the traditional partitions between different branches of mathematics. Professor Woods's present active occupation with a revision of the Institute mathematics along these lines has rendered his participation in the Chicago conference especially appropriate.

At the recent organization meeting of the American Federation

of Teachers of the Mathematical and Natural Sciences at Chicago, Professor Tyler, representing the Association of Mathematical Teachers in New England, was elected president.

DEPARTMENT OF ECONOMICS

A volume entitled "National Problems" by Professor Dewey was published in October by Harper & Brothers. This volume belongs to The American Nation series and covers the period 1885–97. The chapters deal largely with labor, trusts, railroads, and money problems, as well as the foreign complications of the period.

Professor Dewey's "Financial History of the United States" has gone to a third edition.

The Department of Economics has been called upon to co-operate this year in the establishment of a new and promising experiment in sociology. Professor Carroll W. Doten, in addition to his regular duties at the Institute, is acting as head of the Research Department recently established in the School for Social Workers in this city. Under his supervision three subjects are being studied; namely, (1) co-operation in its various forms, (2) seasonal and irregular employments, and (3) inebriety. This last subject is being approached from two points of view, or, rather, is the point of departure for two separate lines of investigation, namely: the study of individual cases and the methods of treatment in hospitals, penal institutions, and under the probation system; and a careful inquiry into the effects of license and no-license in several Massachusetts cities under our local option law.

THE UNDERGRADUATES

THE HOLIDAYS

On Thanksgiving, students who could not be at their homes were invited to come to the Technology Club in the evening. Prof. Edward S. Morse gave a delightful talk on Japan, followed by refreshments.

On Christmas, students who could not go home were invited by the President of the Institute to a Christmas-tree entertainment at the Union. Mr. W. Lyman Underwood gave an interesting talk on Florida, gifts were distributed, and refreshments were served.

On Christmas Eve, Professor Arlo Bates read Dickens's "Christmas Carol" at the Boston Young Men's Christian Union, and Christmas music was furnished by the Commonwealth Male Quartette. Many Tech men were present.

CONVOCATION

The first convocation of the year was held on December 12. Dr. Wilfred T. Grenfell spoke on the work of the Labrador and Deep Sea Mission.

THE CLASSES

1908. The most important event for 1908 this fall was, of course, the annual class dinner. This was held at the Tech Union, Friday evening, Nov. 1, 1907. The class was particularly honored by having President Noyes as a guest. The other guests were Professor Swain and Bursar Rand. Kurt Vonnegut, '08, acted as toastmaster. The fellows gave President Noyes a grand welcome. He announced at the dinner that, beginning next September, the Institute will offer in every department courses leading to the degree of Master of Science.

President Noyes said that the Faculty has been aiming at the

institution of graduate courses for several years; but, owing to the large expansion which Tech underwent during the period of 1892 to 1904, it has been impossible to do so. This last year the enrolment remained about stationary, so that an opportunity has been given to offer the advanced courses.

President Noyes said: "In order to produce the highest type of engineer, it is very important that the student should have a somewhat different character of work than that given in the regular four-year course, which is crowded with subjects of a technical character, so that original research work cannot be taken up. It is unfortunate that Institute men feel that they are educated at the end of their course. They feel that they are completely 'done,' but they are 'done' only on one side.

"If you get an offer of a position as an assistant instructor, take it. The advantage is great, for an assistant instructor reviews the subjects he has so recently been over and drives them home. This work thus differs from graduate study, which allows research work and instruction for small classes. The opinion is apt to be rather prevalent that it is a year wasted, but I consider it as valuable as either one of the last two years of undergraduate work.

"Not enough men come to Technology to prepare for teaching positions. The Institute gets more demands for such positions than it can fill. The idea is somewhat prevalent that a man goes into teaching because he has not energy enough to go into practical work. But the best men enter it in spite of the fact that the financial gain is less, because they feel that the opportunity for service is greater. A man may each year lead a dozen or two dozen or only one or two young people into habits of thought which will determine their whole career. To a man who is naturally a student, the scholarly, intellectual life of teaching is more enticing than practical work."

President Noyes said, further, that the man who achieves the highest success not only carries along existing processes, but improves the old and originates new processes. That it is always hard to get time to do original work President Noyes admitted, but

he urged that it was the one thing to be striven for, and remarked that a man gets his salary for doing what he is paid for and gets his advancement for doing more work than he is paid for.

Professor Swain was then called upon. It was a few moments before he could speak, due to the cheers and applause. After calling attention to the need for closer relations between student and instructor and to the satisfaction which the teacher feels in the development of a student, Professor Swain spoke of the six qualities which he considers necessary for success, saying in part:—

"The first quality is judgment and tact,—the ability to thoroughly grasp a problem, see all its elements in their true perspective, properly weigh them and form a correct opinion as to the course to pursue, and then to follow that course in a way that will not call up criticism and ill feeling. This quality is paid for the highest.

"Second comes character, which consists of honesty, integrity, and all the other qualities of high character. It is hard to see which of these first two qualities is the more important; but it is certain that a man may be perfectly honest and yet, because he lacks judgment, be a failure.

"The third quality is a trained mind,—a mind trained in habits of thoughts which will enable it to take up any new problem and attack it successfully. No matter what training a man has received, with a trained mind he can do anything. There is one graduate of the Civil Engineering Department who is now a clergyman.

"Fourth, experience. It is less valuable than any of the other three, but still it is very valuable. A man with experience has a great asset, and this is the more valuable if he uses the experience of others.

"Fifth come personal qualities, by which I mean the personal attributes, manners, graces, and address, which tend to make a favorable impression; and, last, knowledge, which is the mere acquisition of facts in the mind."

Then came Bursar Rand. He was tendered an ovation, for the Bursar will always be dear to the class of '08. He did not dis-

appoint the fellows, but told some rattling good stories. It was not until the end of his speech that he became serious. He then said:—

"After you have graduated, be loyal to Tech. Remember the good times and the Union. You'll forget the hard lessons and the grind, but you'll remember the pleasant things. We need your support and loyalty. President Tucker has truthfully said that the success of an educational institution is in the loyalty of its sons. Remember that just in so far as you succeed you reflect credit on the Institute."

The Dean was unable to attend, and his absence was much regretted.

Then came the announcement of the class elections. The results were as follows: H. A. Rapelye, president; J. S. Barnes, vice-president; J. T. Tobin, secretary; B. L. Gimson, treasurer; Institute committee, M. E. Allen and T. W. Orr; executive committee, W. A. Barton and S. R. Daddon; Athletic Association, H. E. Allen, H. R. Callaway, B. L. Gimson, G. T. Glover, and J. T. Tobin.

Each of the new officers was then called upon to say a few words. President-elect Rapelye thanked the officers of last year for their good work. Between the speeches were rousing songs and cheers, and thus the most successful and enthusiastic dinner the class ever had came to an end.

The end of the enthusiasm was not yet, however. The fellows, formed in a column of fours, led by Harry Rapelye and "Spike" McGuigan, did a snake dance down to Rogers steps. Then followed more singing and cheering. The Bursar did the class the honor of driving by in his automobile with hat raised, and the fellows showed their appreciation. "Bill" Adams joined the class on the steps, and was given a good cheer. The cheer-leading by "Spike" McGuigan was a feature which seemed to hold the spectators spell-bound. He certainly did his best. Finally, after one last long cheer for Technology, the meeting broke up,—another happy memory for all the Seniors.

The Field Day this year was very successful, and was well handled

by the Advisory Council. George Glover, '08, as the only remaining undergraduate member of the council, did fine work. The following '08 men acted as marshals at the field: Barnes, Barton, Ford, Heilmann, Hoole, Loomis, McGuigan, Pierce, H. Putnam, E. T. Weeks.

In all branches of athletics the class is well represented. In track Captain Orr, Rapelye, Gimson, Blackburn, Schobinger, M. E. Allen, Howland, Callaway, and Batchelder, all veterans, form a nucleus for a good team next spring. Manager Ferris and Captain Howland have just closed a strenuous season of cross-country work.

In hockey Winthrop D. Ford, '08, has been elected captain. He is a fine player, and it is hoped that the team will receive better support than it did last year. In basket-ball Manager Whitmore, Pierce, and Lamont should make the team as regulars. The team promises to be an exceptionally good one. In fencing the class will be represented by A. Turner, formerly of Princeton, and Bounetheau, last year's captain. On the golf team Barcus and C. Turner have done good work. Coffin is manager of the tennis team, and P. R. Fanning president of the Tennis Association. The gym. team is working regularly in the gymnasium in preparation for its annual exhibition.

Under the leadership of George Glover, '08, the Athletic Association was reorganized and a new constitution drawn up, as it was felt that the old Association was inadequate. The new one has met the requirements very satisfactorily. George Glover, the originator, was elected president at the first meeting. He, together with John T. Tobin, '08, will represent the undergraduates on the Advisory Council.

A 1908 man, Conrad Westervelt, of Annapolis, who is studying naval architecture at Tech, wrote this year's Show, entitled "Over the Garden Wall." 1908 is glad to hear that James Francis will again coach the Show. He is well liked by all who know him. Kurt Vonnegut and Sando, '08, will probably again be in the cast.

The *Tech*, under the very efficient leadership of Harry Hoole, '08, has taken a new lease of life. Nothing but real live news will

satisfy Hoole, and in this work he is ably seconded by two other '08 men, Dolke and C. Turner.

The Musical Clubs, in which there are many '08 men, are working hard for their winter concert, which is near at hand.

H. A. Rapelye, '08, is president of the Institute Committee.

Hammer and Tongs elected G. C. Westervelt, '08, president, J. S. Barnes, '08, secretary, and C. Turner, '08, treasurer.

H. S. Osborne, '08, is president of the M. A. H. S. Club.

M. E. Allen, '08, is on the executive committee of the Walker Club.

The Electrical Society elected L. B. Hedge, '08, president, and W. E. Booth, '08, secretary-treasurer.

R. W. Parlin, '08, is president of the C. E. Society. The Program Committee consists of the following '08 men: Gerrish, chairman, Spurr, Tobin, Flaherty, Elton, and Whitmore. Smith, '08, and C. Putnam, '08, compose the executive committee. The society has had several meetings and a supper, all of which were very successful. President Parlin is working hard to build up a strong society. L. B. Hedge, '08, is president of the Tech Y. M. C. A.

The '08 Nominating Committee this year is M. E. Allen, chairman, Heilman, Glover, and Callaway. John T. Tobin, Secretary.

1909. The officers for the coming year are as follows: president, C. W. Gram; vice-president, M. J. Turnbull; secretary, D. G. Haynes; treasurer, J. I. Finnie; clerk, F. G. Taite; Institute committee, J. H. Critchett, M. R. Scharff; executive committee, H. I. Eaton, P. E. Young; Junior Prom. committee, R. H. Allen, A. L. Dickerman, C. J. Belden, W. W. King, C. H. Pope, A. L. Shaw.

The Juniors gave their first class dinner of the year at the Tech Union, November 16, with about one hundred men present. A. L. Moses acted as toastmaster. Dean Burton and Professors Dewey and Passano were the speakers of the evening. D. G. Haynes, Secretary.

1911. The following officers were elected at the Freshman Dinner, November 5: president, Eugene R. Davis; vice-president, Scott P.

Kimball; secretary, Willson Y. Stamper, Jr.; treasurer, P. A. Cushman; clerk, Harold M. Davis; Institute committee, Kester Barr, B. Lawrence; directors, K. W. Faunce, Norman DeForest; athletic association, E. G. Fitzherbert, Edward Van Tassel, Jr., W. J. Seligman, W. C. Salisbury, George A. Cowee.

On December 17 Acting President Noyes spoke to the class on the "Choice of a Course."

ASSOCIATIONS AND CLUBS

The Institute Committee.—The committee met on November 18, and the following officers were elected: Harry A. Rapelye, president of the Senior Class, president; Carl W. Gram, '09, vice-president; and T. W. Saul, '10, secretary and treasurer.

Brotherhood of St. Andrew.—A probationary chapter of the Brotherhood of Saint Andrew was organized on December 5 in the Parish House of Trinity Church, Three months will be required to test the efficiency of such an organization at the Institute.

H. E. Weeks, '08, was unanimously elected probationary director. R. H. Ranger, '11, was elected secretary.

All efforts of the probationary chapter will be centred in bringing men to a corporate communion at nine o'clock the third Sunday of every month.

Catholic Club.—Le Marquis Bouthillier Chavigny, an eminent Frenchman now visiting in America, spoke, December 17, before the Catholic Club on Louis Pasteur.

Civic Club.—The first meeting of the club was held October 18. The topic was "Compulsory Arbitration between Labor and Capital."

On December 5 the club discussed "The Examination System," J. R. Ruckman and B. L. Gimson for the affirmative and L. D. Nisbet and R. Ellis for the negative.

Musical Clubs.—The annual winter concert, held on December 19, was very successful.

TECH SHOW

The title of the Show for 1908 is "Over the Garden Wall." It was written by George C. Westervelt, '08, an Annapolis graduate taking

the course in Naval Architecture. The other writers who handed in plays were Ralph J. Batchelder, '08, A. H. Ginsberg, '09, and Henry A. Hale, '10.

The performances will be given as follows: April 18, evening, at Northampton; April 20 and 21, matinees, Boston; April 20, evening, Malden. The Boston performances will probably take place at the Colonial Theatre.

TEMPORARY WALKER MEMORIAL

A plan proposed by the *Tech* for the utilizing of the Grundmann Studio Building as a temporary Walker Memorial Building is being actively discussed and generally advocated by the student body. A petition covering fully the student side of the use of the Copley Hall Building as a temporary Walker Memorial or Union has been presented to the Executive Committee of the Corporation, the Faculty of the Institute, and the Walker Memorial Committee. This petition was drawn up and presented by Harry A. Rapelye, president of the Institute Committee, and Henry William Hoole, editor-in-chief of the *Tech*.

After calling attention to the present crowded condition of Rogers and other buildings, the petition brings out the following points in favor of the plan:—

First.—The overcrowded condition of the Mechanical Engineering Laboratories in the basement of Engineering Buildings A and B, and the desire to use the present Union for an adequate Chipping and Filing Laboratory. The placing of the Tech Lunch-room and the Union in the Copley Building would free a large floor room.

Second.—The need for the rooms now used for student interests in Rogers Building.

Third.—The inadequacy of the present lunch-room to cope with the problem of the feeding of 1,400 students.

Fourth.—The need of a common or lounging room.

Fifth.—The need of study-rooms for the lower classes.

Sixth.—The recurrent demand for small recitation-rooms, now felt for the second time by the Institute.

Seventh.—The advisability of trying out in some way the various

schemes for the arrangement of the permanent Walker Memorial Building.

Eighth.—The desirability of making the Walker Memorial Fund a live issue.

Ninth.—The pressing need of a greater social life among the Institute students.

Tenth.—The great need of such a building as the Walker Memorial Building at the present time.

Eleventh.—The need of an opportunity for the student to practise or see practised, at short range, the general principles of business on the lines laid down by Isaac W. Litchfield, '85, in his article on "Apprenticeship for Business Responsibility."

Twelfth.—The great need of nourishing and propagating a loyalty and spirit to and for Technology among the undergraduates in order to have that same loyalty in the future alumni.

A tentative plan for the use of the Copley Hall Building is given, including a dining hall, lunch-room, lounging or common rooms, a trophy-room, a place for the Frank Cilley Memorial Library, study-rooms for the lower classes, small recitation-rooms which could be used in the evening for dining-rooms for the societies, a "cage" and central post-office, headquarters for the Alumni Association, the *Tech*, the *Technique*, Tech Show, Musical Clubs, and the various committees.

The financial arguments against the idea are answered at some length, together with the argument that it is another temporary feature of the Institute buildings, as well as the students may.

Appended to the petition are resolutions from the Board of Editors of the *Tech*, the Institute Committee, the four undergraduate classes, the Tech Show management, the Board of Publication of *Technique*, 1909, the Technology Young Men's Christian Association, the Civil Engineering Society, the Mechanical Engineering Society, the Architectural Society, and the Walker Club, bringing out the need of such a building as the Walker Memorial Building, and the feeling that the Copley Hall Building should be used for such a purpose. Other societies and clubs have passed such resolutions, and committees are now at work drawing them up. These

organizations are the Mining Engineering Society, the class of 1907, the combined Musical Clubs, and the Chemical and Electrical Engineering Societies.

ATHLETICS

CROSS COUNTRY

Harvard defeated Technology, November 1, in the annual run.

Over two hundred undergraduates went to the Back Bay Station on November 25 to give the team a "send-off" on its journey to the intercollegiate races at Princeton. The race took place on November 27, and Cornell was victorious for the eighth time in nine years. Tech secured seventh place.

FENCING

The Technology team was officially admitted, in October, to the Intercollegiate Fencing League.

On November 14 the club was formally organized with the following officers: Captain E. M. Loring, president; J. W. Nickerson, '09, vice-president; V. C. Grubnau, '09, secretary; F. J. Lange, '09, treasurer.

At the first interclass fencing meet, on December 2, '09 won first place with 15 bouts, '11 being second, and '10 third. V. C. Grubnau won the ribbon for individual superiority.

BASKET-BALL

The first game of the season was played on December 10 with Boston College. Tech won, with a score of 71 to 8.

On December 14, in a game played in the gymnasium at Hanover, Technology was defeated by Dartmouth, the score being 37 to 21.

On January 1 Tech was twice defeated at Tufts, the score of the first team being 25 to 21 and that of the second team being 30 to 13.

TENNIS

On October 5 the following officers of the M. I. T. Tennis Club were elected: president, P. R. Fanning; vice-president, J. Larned;

manager, L. Coffin; treasurer, J. Scheuer. M. T. Whiting, '08, defeated P. M. Wentworth, '09, in the finals of the singles of the fall tennis tournament, Whiting winning straight sets, 6–2, 6–1, 6–3.

GOLF

On October 16 Tech was defeated in the annual tournament of the New England Intercollegiate Association by Williams and Dartmouth.

THE GRADUATES

THIRTY-THIRD ANNUAL MEETING OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY ALUMNI ASSOCIATION, JAN. 10, 1908

The business meeting was called to order, at the Hotel Brunswick, by President Morss a few minutes after six o'clock.

The usual reports were read. Abstracts of these will be printed in a later number of the REVIEW. At the suggestion of Professor Richards, for the Committee on the Rogers Fund, it was voted that the note made by students receiving scholarship assistance from this fund be changed in form. It is hoped that under this new form the beneficiaries will pay back more promptly the assistance received by them, in order that the fund may be more widely useful. It was suggested that the number of vice-presidents of the Association be increased, in order to give organizations at a distance from Boston representation upon the Executive Committee. Under the constitution this had to be referred to the Executive Committee.

The meeting adjourned at 6.50 P.M. to the annual dinner, where gathered two hundred and fifty-three guests, graduates and past students. The invited speakers were his Excellency Curtis Guild, Jr., Governor of the Commonwealth; Dr. Arthur Amos Noyes, '86, Acting President of the Institute; Dr. John H. Finley, president of the College of the City of New York; Mr. Joseph P. Gray, '77, term member of the Corporation of the Institute; and Francis R. Hart, '89, Treasurer of the Institute. President Everett Morss, '85, of the Alumni Association, acted as toastmaster.

Among the invited guests were present from the Corporation Messrs. J. B. Sewall and Frederick P. Fish; from the Faculty and Instructing Staff, Dean Burton, Professors William H. Niles, Gaetano Lanza, Thomas A. Jaggar, Dugald C. Jackson, W. H. Walker, H. O. Hofman, Homer Albers, Robert Smith, Joseph Blachstein, and the Bursar, Frank H. Rand. The other guests were Mrs. William B. Rogers and Miss Porter, Mrs. Francis A. Walker, Mrs.

Silas W. Holman, Mrs. Alfred E. Burton, and Mrs. Everett Morss, ex-President J. M. Crafts, and Mr. and Mrs. George Wigglesworth.

President Morss, in opening the speaking, touched upon the statistics of the graduates. In this thirty-third year of the Alumni Association there are about thirty-nine hundred graduates. As the fortieth class has been graduated, the average is a little less than one hundred members per class. This average per class does not tell the whole story, for the first graduating class had only fourteen members, the smallest graduating class five members, and there have been nine classes with less than twenty members.

President Morss then explained the reason for placing beside each plate a copy of the *Tech*. He said: "There is a movement of great moment going on among the students for a temporary Walker Memorial, utilizing the Copley Hall Building, or Grundmann Studios, owned by the Institute and known in the old days as Winslow's Skating Rink, for this purpose. The need of such a building is great." He then introduced the governor.

Governor Guild, after telling several after-dinner stories, turned to the educational work and status of Massachusetts, saying in part:—

Massachusetts is proud of Massachusetts not only as a State, but as one of the United States. All must recognize the leadership of the Commonwealth in citizenship. Massachusetts is, perhaps, proudest of its education. It is proud of Rogers. It boasts of the finest agricultural library in the country, outside of Washington, in the little agricultural college at Amherst, of the finest electrical laboratory in the world at the Worcester Polytechnic Institute, and of the finest naval construction course in the world at the Institute of Technology. Our young men who wish to learn ship construction no longer have to go to France or England, as in former days, for instruction and naval plans.

To show the standing of the Institute abroad, I will speak of a Scottish member of Parliament, from Ayrshire, who is sending his son to the Institute of Technology for the course in electrical engineering. This Scotchman told me that he sent his son here because he wanted the best course possible. We must not push this technical education too far. We must teach history, philosophy, and other broadening studies. As ex-Governor Russell once said, "We must not teach how to make a living, but how to make a life." The expert machinist may become a burglar, the expert

accountant an embezzler, the professor may use his knowledge to fool the people, if none but the purely professional things are taught. All must have a broad training to become citizens. To have a democracy, there must be intelligence. The schools must turn out men so educated that Tammany Hall and machine politics would become impossibilities.

The problems of technical education will not be solved by introducing sloyd courses in the lower schools, but by giving such instruction in special institutions, like the Worcester Polytechnic Institute, the Massachusetts Institute of Technology, the agricultural colleges and technical schools. The common school education as it has been must be conserved. These special schools must turn out men equipped for expert work in their profession, and educated also for citizenship. It is my sincere hope that the Institute will hold to this. This State of Massachusetts is a restricted bit of real estate. It has no natural advantages, no gold mines, no iron mines, no forests, little soil; but in spite of this its history is not unworthy. These disadvantages have taught Massachusetts to cultivate brains. For the future history to be worthy, Massachusetts must not only train the skilled brain of the leader, but the skilled hand of the artisan.

President Morss, in introducing Dr. Noyes, said that, if there were "nothing doing on the moving question" and if there were no new buildings, there is hope. He continued: "A year or so ago Dr. Noyes was elected Chairman of the Faculty. Many asked why he had been elected. The answer seems to be that they were preparing to utilize him as acting President."

Dr. Noyes's speech on "Education in Engineering and Applied Science at the Massachusetts Institute of Technology" follows:—

Much as the matter has been discussed during recent years, it has seemed to me that there was no more important subject on which I could speak to you to-night than the principles underlying the Institute's system of education in engineering and applied science; for the relations of its field of work to that of other institutions can be understood, and its lines of future development can be properly provided for, only when those fundamental principles are appreciated. I shall incidentally speak of the educational progress of the past year.

The higher education of men for the engineering or scientific professions involves three kinds of educational experience:—

First, such studies, student activities, and social surroundings as give breadth of view and scholarly interests and develop in the student the personal qualities essential to cordial and effective relations with other men.

Second, a thorough knowledge of the fundamental principles of those sciences upon which the future profession depends, a training in scientific method, and a development of the power of investigating scientific problems.

Third, specialized knowledge and practice in the branch of engineering or applied science constituting the profession itself, and original work in solving practical problems or in designing new structures or machines.

These three sides of professional education I will for brevity designate the general training, the scientific training, and the engineering or technical training.

Let us consider now how the different types of institutions aim to meet these three requirements. The college, by its Bachelor-of-Arts course in the humanities and in the generalities of science, offers what from the Institute's standard of work represents about three years of general training. The university schools of medicine or engineering then take these Bachelors of Arts, without adequate scientific training though perhaps with some scientific knowledge, and give them in a period of three or four years more a combination of scientific and technical training. The Institute, speaking generally, may be said to devote the first two and a half years of its courses to a combination of general and scientific training in not far from equal proportions, and to give the last year and a half to engineering or technical training.

Without undervaluing the opportunities which the preliminary collegiate course affords to certain types of students and for certain professional ends, let me recall to you some of the distinct advantages of our own system of education. In the first place, we believe that, aside from its professional aspect, the supplementing of general studies by a scientific training in the first three years gives a broader culture and a better preparation for life than the usual college course where the instruction in science is made subordinate; for we hold, in the words of one of our American psychologists, "Science is the chief factor in culture and in life." We believe, too, that the co-ordination of general and scientific studies throughout a single course gives better results rather than the plan of having the one precede the other. We question even the correctness of the fundamental principle of the university plan that the early years of a young man's education should be devoted to the requirement of culture and the later years to scientific and technical

training. We believe the opposite plan is the natural one. The young man must be thoroughly *trained* in the earlier years—to work hard, to think clearly, to express himself well, and to attack and solve problems; that the expansion of his mental horizon which constitutes culture must be a gradual process going on through all the years of his study and through his subsequent life. At the age when young men enter upon higher education the mental organism is fast losing its plasticity and is setting into the form which it will retain forever; and there is no time to lose in moulding into it those habits of thought and habits of work which are essential to the accomplishment of great results. We, therefore, prefer to show our students at once "the steep and thorny way" to success rather than to afford them opportunity to wander in the "primrose path of dalliance." If at the end of our course we can send our men forth with well-developed faculties, with high ideals and earnestness of purpose, and with sufficient general education to realize the variety of human activities, we can safely trust to the future years of contact with the world and to natural development to bring added breadth of view and that intangible quality which is called culture. We hold, too, that, while the student should be given the freest choice as to the profession and the branch of the profession for which he wishes to prepare himself, we are the better judges of what special studies are adapted to give him that preparation. We believe in offering a large choice of courses with options within those courses, but not in the unregulated elective system. Finally, we should appreciate the great advantage of our sound student life and the possibilities of further developing it under conditions which will not introduce the evils that often attend it in the colleges.

I have discussed these characteristics of our undergraduate courses because it is important for us all to realize that the Institute has a field and system of education of its own in which it is highly successful. Some of the older alumni seem to have the feeling that students at the Institute miss something rather essential which a college course would give them. This feeling arises, I believe, from the failure to realize that much of what they themselves missed on the social side is now in large measure provided for by the great development of student life which has taken place within the last ten years, and that, if they do miss *something*, they got more than its equivalent in acquiring the solid qualities which the college course so often fails to give. It is an interesting fact that the college men upon our Faculty who have had experience with both systems of education are the heartiest believers in our own.

It is, of course, true that a larger amount of time than four years could

with advantage be devoted to each one of the three sides of our professional education; and we must offer additional opportunities in these directions.

It must, on the one hand, be distinctly recognized that we cannot hope to give in this period the specialized knowledge and the training in investigation that it is desirable that the fully educated engineer or scientific expert should have; and we must make obvious to all students the importance of returning for a fifth year in order to secure these advantages. During the present year an important step in this direction has been taken by announcing in almost all departments a large number of subjects of instruction (over sixty in all) dealing with the more advanced topics and the recent developments of engineering and applied science, such, for example, as the design of structures in re-enforced concrete and of railroad and hydraulic works, the study of gas engines and steam turbines, the design of dynamos and power stations.

An advanced course made up of such subjects and of investigation work will remedy the difficulty of insufficient engineering training; but it is also, I believe, important for the Institute to offer to its students another type of five-year course which will enable those who can afford the time to secure a broader general training and a more thorough scientific foundation. A plan for accomplishing this, which is under consideration by a Committee of the Faculty, consists in offering a three-year course in general science made up partly of required and partly of elective subjects of such a character that the student who has completed it can enter the third year of any of our regular courses and finish it in two years more. By thus replacing the first two years' work by three, he will have the opportunity of including a much larger proportion of studies of a general and fundamental character. Such a three-year course carried on by the methods and in the atmosphere of the scientific school can hardly fail to be more cultural in the truest sense than the usual college course taken upon the elective plan without a definite professional aim in view.

While it is highly desirable to offer to our students such opportunities as these for a broader as well as for a more thorough and specialized education, I believe the results of our four-year course are at present sufficiently satisfactory to make it unwarranted to *require* for our Bachelor's degree a longer term of study than four years,—at any rate, so long as the cost cannot be materially reduced; for we should thereby further limit the number of young men who are able to educate themselves for the scientific professions. I hold this belief the more strongly because the possibilities of our four-year period have not as yet been fully realized. It is, therefore, to in-

creasing the effectiveness of our undergraduate instruction and to improving the social and physical conditions of our student life that our attention must be mainly devoted; and with the solution of these problems the Faculty and its administrative officers are engaged. Because we of the Faculty are earnest believers in the plan of education for which the Institute stands and in the kind of training which it affords, it must not be thought that we fail to realize that there are many defects in our execution of that plan and many individual cases in which an adequate training is not secured.

Let me mention briefly some of the steps which have recently been taken or are under consideration for attaining better results. A somewhat radical change has been made in the curricula of our engineering courses through the omission of the second-year work in modern languages; and the time thus gained has been utilized to increase the amount of instruction in English and history and to give a more thorough drill in fundamental engineering subjects, especially in applied mechanics, structures, and steam engineering. It is felt that few engineers make practical use of their knowledge of modern languages, and that the general and scientific studies that have been substituted are not only more directly useful, but either have a higher cultural value or provide a better mental training.

A plan for securing closer individual contact between students and their instructors and for assisting such students as have special difficulties has been entered upon to a limited extent during the present year. The instructors in English and mathematics meet each first-year student individually several times during the term and discuss the work together. It is hoped this conference plan and the plan of smaller sections may be greatly extended. The additional expense which it has so far involved has been met by an appropriation from the alumni contribution.

Another development of the undergraduate work which is under consideration is the requirement of summer work for four or five weeks in the summer following the first and second years. To the summer would be transferred some of the laboratory practice, drawing, shop work and field work, thus giving time for more general studies, for more thorough work in fundamental subjects, and for relieving the pressure which is excessive at certain periods in our courses.

The development which student activities have undergone within recent years is perhaps not appreciated by many of the older alumni, who are apt to picture the Institute as they knew it during their own student days. This development has, moreover, been in the main a thoroughly healthy one; and there is to-day in our student body a loyal, earnest, democratic

the colleges forced to meet a problem similar to that which the Institute is now facing, that of moving to a site farther removed from the crowded section of a big city. President Morss called upon Dr. Finley to give the alumni a little advice on the question of moving the Institute.

Dr. Finley opened his speech in the conventional manner of the New Yorker before a Boston audience, saying, "I am appalled by Boston and this Boston audience, made up of people who know everything about something, while I make a business of knowing something about everything." He then quoted, "Boston presents a terrifying aspect of æsthetic discrimination." He would not speak on the moving problem of the Institute, as he did not know enough about the circumstances of the case, but preferred rather to speak on what was uppermost in his mind, the training of the city youth. He said in part:—

Who is this that is to be educated, who is this person to be trained? It depends upon the viewpoint. The physician looks upon this youth as a complex machine, made of a number of intricate parts, a machine which he attempts to keep running, repairs when broken down, tries to keep from breaking down. To the lawyer this youth is one that has not as yet come into his legal rights. To the guardian of the peace, the policeman, this youth is known as a potential mischief-maker, a human automobile that is liable at any moment to exceed the speed limit. To your Dr. Dewey this youth is a consumer or a producer. To the manufacturer the youth is a hand, to the banker a brain, to the poet something that has just come out of paradise, to the preacher a soul. To the teacher this youth is all these, the complex machine, the mischief-maker, the soul, the brain, everything. Carlyle defines youth as a being caught between two eternities, the past and the future, running away from the first, blind to the second. Yet these millions of youths will have our sun, our moon, will have the earth in which our dust will be.

Dr. Finley said he had been told that the city and the country boy are very different. He could not see the difference. The mere environment was not of vital importance in this case. People went to hear and enjoyed the roar of Niagara, but were vexed at the roar of the city; did not mind the dirt of the country road, but were worried by a little dust on the city pavement; admired the cliffs and canyons, but were displeased with the sky-

scraper,—the feelings being merely fashions. The speaker believed that the moral environment in the city was better than in the villages and small country towns. It was hard for him to believe this, but he had drawn the conclusion only after securing an amount of testimony from persons in outlying districts. Dr. Finley said, "There is to-day life as debased on the slope of the mountain as there is in the shadow of the sky-scraper."

Dr. Finley did not believe that the old common school of the city and of the country, the old country academy, are sufficient. The city is growing, is persistent, is tyrannous. He cited an incident of his speaking to a graduating class of a school in New York in which there were more boys than in the whole United States at the time of Washington. The increase in population he brought out from a statement of an immigration official, who said that in every hour there are eighteen more people in New York than in the preceding hour. With this great growth it was the youth that would share the city.

"We boast of what we spend on education," said Dr. Finley, "yet for the individual it is no more than if we sent each on a trolley ride each day." The speaker felt that the most important service of a generation was the carrying of the knowledge of that generation to the next. If teachers were paid commensurate to their services, the pay would be so large that people would flock into the profession, and it would no longer be a profession, but a trade, because these people would be doing it for monetary gain. The ideal for the teachers Dr. Finley gave: "For their sakes, I sacrifice everything." This ideal and instinct the colleges should develop more.

In closing, Dr. Finley hoped that, if the Institute moved at all, it would not move so far away from the city that the poorest boy and poorest girl might not reach it.

Joseph P. Gray, '77, term member of the Corporation, said:—

We have been received into the Corporation in a most cordial manner. At present there are a number of vital questions before the Corporation, the Faculty, and alumni. The two great questions are that of the site and the presidency. The site question has been set back by the financial depression. The presidency question has been settled, temporarily at least, by the appointment of Dr. Noyes as Acting President. Who knows but this will permanently settle the question? I want here to pay a slight tribute to Dr. Noyes, who has most ably served under most trying circumstances.

Francis R. Hart, '89, then spoke a few words on the Income Fund in connection with the Institute finances. The figures he gave were for 1906, $42,583, and for 1907, $46,588, making a total of something more than $89,000 turned over to the Institute by the Fund Committee. The application of this money Mr. Hart explained by reading portions of the Treasurer's report for the past year.

The following gives the portion referring to the Income Fund:—

It is proper to make special reference to the great assistance furnished by the Income Fund Committee. Had the whole of the money contributed from this source been used for this year's expenses, this report would have shown a surplus of several thousand dollars instead of a deficit in the current expense account, but it was felt that the wishes of the alumni would best be carried out by devoting their gifts, as far as possible, to special matters of development rather than to mere maintenance. Accordingly, besides paying during the past year for special apparatus for the Mechanical Engineering Department and for the Electrical Engineering Department, and besides salary payments to strengthen the instructing staff, there has been reserved the sum of $10,000 to be applied during the coming year to certain special purposes, such as the purchase of a steam turbine and the extension of the plan of personal conferences between first-year students and the instructors, in which matters various alumni have expressed a special interest.

The Walker Memorial contributions are technically held as a separate fund, and are not strictly to be included in the accounts of the Institute, but for the information of the alumni there is given in the present report a list of the securities held for that fund, and a statement of its total amount, which with accrued interest at the time of this report is $112,033.40.

The Treasurer then spoke of the mutual advantage of the Income Fund, the practical benefit to the Institute, and the benefit to the association in making it more interested in the Institute, having a unifying influence on the body of alumni.

In regard to Copley Hall, Mr. Hart said that everything of interest to the students was of interest to the Corporation and alumni, and that consideration of the proposal had already begun. In the consideration of it there were other things than the mere taking over of this building to be thought of. He pointed out that the Copley

Society had expended much money in improving the hall, and that in this the Institute had participated. Mr. Hart felt that there were moral equities to be considered. He felt that there was a possibility of compromise with the Copley Society, in which certain portions of the building could be used for the best interests of the students.

Walter B. Snow, '82, the new president of the association, was called upon, and spoke of the great services that Mr. Morss had rendered to the association and the Institute in his capacity as president and as chairman of the Income Fund Committee. He also spoke of the scope of the twenty or more Technology clubs in the middle and west of the country, and the great need of much spirit and co-operation in the coming great reunion.

ASSOCIATION OF CLASS SECRETARIES OF THE M. I. T.

ELEVENTH ANNUAL MEETING, NOV. 22, 1907

The eleventh annual meeting and dinner of the Association of Class Secretaries was held at the Technology Club, Boston, on Friday evening, Nov. 22, 1907. Following the dinner, the business meeting was called to order at 7.50 P.M., and Walter B. Snow, '82, was chosen chairman for the evening.

The minutes of the previous special meeting of April 5, 1907 (at which arrangements were made for the annual Commencement celebration), and the financial report of the year, were read by the secretary and approved. Owing largely to the successful management of the annual Tech Night Pop Concert, which the Association has undertaken for the past three years, our funds have been substantially increased, the profits from each concert having been sufficient to leave a good balance for the treasury after paying the Association's share of the general expense of the Commencement celebration, such as printing, postage, clerical work, and the like. At the beginning of the annual meeting of 1906 the Association had a balance of $580.39, this amount being increased during the meeting to $955.72 by the payment of $375.33, the net proceeds of the 1906 Commencement celebration. During the year the Association has received contributions from classes amounting to $130.50;

interest, $52.10; and the net profits from the 1907 Commencement, amounting to $308.54. The expense for printing, postage, stationery, clerical work, and messenger service, has been $26.52, leaving a balance on hand at the close of the financial year of $1,420.34.

The report of the Committee on Publication of THE TECHNOLOGY REVIEW was presented by J. P. Munroe, '82, managing editor, as follows:—

In the last annual report it was stated that Mr. Edward G. Thomas, '87, had accepted a position upon the Board of Publication in place of Mr. Leonard Metcalf, resigned. Early in the year, however, Mr. Thomas removed to New York, and, much to the regret of the other members, found it necessary to sever his connection with the board. The vacancy thus created has not yet been filled, mainly for the reason that, since the coming year must see a reorganization of the management of the REVIEW, it seemed best to make no selection at the present time.

Since the Institute, pending the selection of a new President, has not entered upon any large policies of development, the volume of the REVIEW for 1907, like that for 1906, is mainly a record of the current work of the Institute and of the doings of past and present students. The total number of pages, however, is greater by 38 than in Volume VIII. That interest in the publication has not flagged is indicated by the fact that the number of new subscribers has been 356, while over 86 per cent. of the old subscribers have been retained.

In spite of an increase in the cost of printing and a considerable falling off, as was predicted last year, in receipts from advertising, the cost of Volume IX has been kept within the current income. To do this, the October number had to be made unusually small. For the coming year, however, the Association must seriously face the question of securing a greater revenue. With that problem in view the board has conferred with Mr. Rand, Bursar of the Institute, in regard to the possible placing of the whole advertising question, as it concerns the REVIEW, the *Quarterly*, the *Architectural Record*, and the various student publications, in his hands, in order that the matter may be put upon a definite basis and in order to avoid the soliciting of friends of the Institute by more than one advertising agency. His heavy duties at the opening of the term have prevented him from perfecting a plan; but it is hoped that he may see his way to carry out some arrangement through which the income of the REVIEW from advertising,

heretofore dependent upon the personal efforts of the Board of Publication, may not only be considerably increased, but may also be put upon a dependable footing.

Although the very great efficiency of the clerk has so systematized the work of the REVIEW that the duties of the managing editor have been reduced to those mainly of supervision, he yet feels that he cannot, in justice to other demands upon his time, much longer carry the responsibility involved. He begs, therefore, to present his formal resignation, to take effect at such time during the coming year as it may be found possible to make other arrangements for the REVIEW. In doing so, he desires to express his very hearty and grateful appreciation of the cordial way in which every one connected with the Association of Class Secretaries and with all departments of the Institute has co-operated in carrying forward the periodical. Without this ready and unstinted aid the work would have been impossible.

Professor C. Frank Allen, '72, moved that the report of the Committee on Publication be accepted, the motion being seconded. The chairman called attention to the fact that the acceptance of the report meant the acceptance, also, of the resignation of the managing editor. Speaking upon the motion, Everett Morss, '85, president of the Alumni Association, paid tribute to the work of Mr. Munroe upon the magazine, and said that, while every member realized that the success of the publication had been due in very great measure to the devoted and efficient work of the managing editor, they also appreciated the fact that after nine years of such service it was only just that the editor should be relieved of his duties; and, while every one deeply regretted the necessity for such action, he believed that the meeting should accede to Mr. Munroe's request and accept the report and the resignation. The report was accepted by unanimous vote.

Mr. Munroe suggested that the selection of a managing editor be left to a special committee of seven or nine, to consist of the secretary of the Association, the Committee on Publication (four members), and others to be named by the chairman of the meeting. Upon motion of Professor Allen it was voted that the matter be left to a committee of seven, the membership of the committee to be in accordance with Mr. Munroe's suggestion. The chairman

named for members at large upon this committee Mr. Morss and Professor Allen.

The report of the 1907 Commencement Celebration Committee was presented by the chairman, Mr. Morss, and accepted. The report of the sub-committee on the Pop Concert was presented by L. W. Pickert, '93, in the absence of R. H. W. Lord, '05, chairman, and was also accepted. Mr. Pickert read a list of suggestions for the guidance of future Pop Concert committees; and he read, also, a letter from Dr. Francis H. Williams, '73, suggesting that, as the older alumni are not familiar with the Tech songs, it might be well to select a few of them, print them with music, and circulate them among the classes for use at the smaller gatherings, so that at the Pop Concert all alumni would know the songs and join in the singing.

A general discussion was held upon the subject of the Tech Night Pop Concerts. It was the sense of the meeting that in the last two or three years our Tech Nights have become too strenuous and noisy. Such enthusiastic demonstrations as those of the 1907 concert, which were started by some of the younger graduate classes and taken up by the undergraduates and others, cannot be pleasing to our guests in the balconies; and it was feared that, if persisted in, they would cause men of the older classes to stay away on account of the noise. The failure of the alumni at this year's concert to join in singing the Tech songs was commented upon, and was thought to have been due to the fact that the songs are new and are unknown to most of the alumni, and that for some reason only a few men were able to obtain that evening the printed copies of the words of these songs. It was suggested, further, that the holding of class dinners just before the concert might be a disadvantage, and that possibly it would be better to have those dinners on the preceding Monday night.

It was felt that by better organization and careful management great improvement may be effected in future concerts. The early appointment of a committee to make preliminary plans for the 1908 concert seemed desirable. It was suggested that the songs to be sung next year be selected very soon; that they be printed

and widely circulated among the alumni, who should be urged to sing them at their class meetings; and that the undergraduates be asked to practise them during the year at their frequent meetings at the Tech Union. Then, by having at the concert some one with a strong voice to lead the singing and by having sub-leaders scattered throughout the floor, it was thought that the singing could be made a very successful feature of the program. The cheering should be organized, and it should be understood that there was to be no cheering during the music. Speaking for the undergraduates, H. A. Rapelye, '08, president of the Senior Class and of the Institute Committee, said that by beginning now he felt sure that the undergraduates can be made to appreciate the situation, so that at the next concert they would not indulge in any objectionable demonstrations. Mr. Pickert said that in each graduate class the secretary has power to wield his class on every occasion; that, if each class secretary were instructed as to what was expected of him and of his class, there was no danger of over-enthusiastic demonstrations at any concert.

I. W. Litchfield, '85, moved that the chairman appoint a committee of fifteen, including the next president of the Alumni Association as chairman, to take full charge of all arrangements for the 1908 Commencement except those for the alumni reception to the graduating class. Professor Allen moved to amend the motion to provide that the chairman of the meeting should act as chairman of this committee until the new Alumni Association president was elected. The amendment and the motion were seconded and carried by unanimous vote. The chairman has named the following 1908 Commencement Celebration Committee: W. B. Snow, '82 (chairman), E. C. Miller, '79, B. R. T. Collins, '88, Harrison Loring, Jr., '89, C. F. Park, '92, L. W. Pickert, '93, H. W. Hayward, '96, N. J. Neall, '00, M. L. Emerson, '04, F. H. Hunter, '02, H. A. Rapelye, '08, J. T. Tobin, '08, D. G. Haynes, '09, C. C. Webb, '10, W. Y. Stamper, Jr., '11.

Professor J. F. Norris made a report upon the general spread of all classes which was held at the Technology Club on the afternoon of Commencement Day. This last year it was decided to

make the spread of particular interest to the women of the Institute, to whom special invitations were sent, as this seemed the best opportunity among the Commencement functions for the women to meet their fellow-alumni. A fair representation of the four hundred Institute women were present, and many men came also, so that the second and third floors of the club were well filled. It was suggested that, if the general spread is to be repeated next year, it would be desirable to give up the first floor of the club wholly to the men of the alumni, and to use the second floor for both the women and men, as was done this year.

Mr. Munroe brought up for discussion the question whether graduates of the old School of Mechanic Arts, formerly connected with the Institute, should be made eligible to election to associate membership in the Alumni Association. Although this school was properly of preparatory grade, its students took a certain amount of undergraduate Institute work under Institute teachers, and received upon graduation certificates signed by the President and Secretary of the Institute. In a number of instances graduates of this school have achieved prominence and are better educated than many Tech men who were at the Institute only one year, and among the mechanic arts graduates are to be found some of Technology's most loyal friends. Mr. Morss spoke highly of the *personnel* of these graduates, and said that the matter had received the consideration of the Alumni Association's executive committee, by whom it had been decided that, inasmuch as these men had not really been a part of the Institute, it seemed unwise to change the constitution of the Alumni Association so as to make them eligible to election to associate membership. No action on the proposition was taken by the meeting.

F. H. Hunter, '02, suggested that it might be possible and desirable to give an evening performance of the Tech Show in Boston, in order that the alumni might have a better opportunity to attend the production. C. C. Webb, '10, who is connected with this year's Show, thought that in the three days of Junior Week there was not the opportunity for an evening performance unless the out-of-town performance be dropped. Upon motion of Mr. Hunter it was

voted that the chairman appoint a committee of three to confer with the Tech Show Committee, and to get the opinion of alumni upon the matter of an evening performance of the Tech Show. The chairman appointed upon the committee F. H. Hunter, '02, Bryant Nichols, '07, and C. C. Webb, '10.

It was voted that for the ensuing year the Technology Club of Northern Ohio and the Rocky Mountain Technology Club be represented, by their secretaries, upon the Committee on Closer Relations among Graduate Organizations. To this committee was referred the suggestion of Mr. Hunter that it might be possible to organize a Technology Club at Detroit.

The meeting adjourned at 10.18 P.M.

Attendance, twenty-nine.

FREDERIC H. FAY, *Secretary.*

TECHNOLOGY CLUB OF NEW YORK

The following extracts are from a circular dated Oct. 1, 1907, which was widely mailed to Institute men in and about New York:—

The suggestion was made last winter that the Alumni Association of the New England colleges should co-operate in erecting a building which would afford to their alumni adequate club accommodations (for Amherst, Brown, Dartmouth, Technology, Wesleyan, and Williams), and committees were appointed to consider the feasibility of such a plan. Representatives from these committees have held frequent meetings during the past five months to discuss the proposition and formulate a plan to present to their respective associations. It is the opinion of this committee that it is financially practicable, and should be put into operation as soon as possible. This circular is being sent to the alumni of all the colleges represented at the conference, in order to obtain a general expression of opinion before bringing the matter before the various associations.

The primary object of a college club in this city is to bring together the younger graduates coming to New York each year, to provide a place where they may live with reasonable economy, meet the older alumni, and keep alive their college interest and spirit. . . .

It is now proposed that the alumni of the six colleges unite in purchasing a site in the club district north of Forty-second Street and erecting a suitably

equipped and modern club-house, the building to be nine stories in height, with a frontage of not less than fifty feet, and with its general arrangements as follows:—

On the two lower floors are to be located the office, dining-room, café, billiard and card rooms, and in the basement squash courts, kitchen, the mechanical plant, and laundry.

On each of the next six floors are to be a general club-room and from fifteen to twenty living-rooms, these to be known as Club Floors, the top story to contain sleeping-rooms for the use of non-resident members.

The building is to be built and owned by a holding corporation to be organized for this purpose, about sixty to sixty-five per cent. of its cost to be carried on a permanent first mortgage, and the balance raised by the sale of second mortgage bonds, issued in small denominations and sold to the alumni of all the colleges, of whom there are about five thousand living in New York and vicinity. . . .

It is then proposed that each of the six colleges represented form separate clubs, and that each club shall lease one of these club floors for its exclusive use, reserving the club-room for the general use of its members and renting the sleeping-rooms to those who wish to live at the club. The lower floors are to be used by all the clubs in common, the dining-room to be arranged, if desired, with large tables for each club and smaller tables for general use.

Arrangements could be made by which the dining-room on certain evenings could be reserved exclusively for one of the colleges for its smokers and dinners.

The general management of the building would be in the hands of a joint committee representing all the clubs. . . .

You will greatly oblige the undersigned committee by communicating with the representative of your own college, stating whether or not you are in favor of the proposed plan and adding any suggestions which you may have in regard to it.

Albert H. Walker, Amherst, 32 Liberty St., N.Y.
Alfred B. Meacham, Brown, 59 Wall St., N.Y.
A. B. Clark, Dartmouth, 100 Broadway, N.Y.
Allston Sargent, Technology, 1135 Broadway, N.Y.
Horace D. Byrnes, Wesleyan, 141 Broadway, N.Y.
Henry R. Conger, Williams, 40 Wall Street, N.Y.

TECHNOLOGY CLUB OF THE MERRIMACK VALLEY

The fall meeting and supper of the Technology Club of the Merrimack Valley, held Dec. 5, 1907, at the Franklin House, proved to be one of the most successful affairs ever conducted by this society.

About thirty members from Lowell, Haverhill, Manchester, N.H., Salem, and Lawrence, gathered around the festive board; and all did full justice to the sumptuous menu provided by Proprietor Dickie and an efficient corps of waiters.

The speaker of the evening was Henry A. Morss, of Boston, commodore of the Corinthian Yacht Club of Marblehead.

Mr. Morss, in a stereopticon talk, graphically described the yacht race to the Bermuda Islands last summer, under the auspices of the Corinthian Yacht club.

The talk was hugely enjoyed by the jovial company, and was very well delivered, Mr. Morss being in a position to fully describe the race, as his private yacht "Dervish" took the first honors.

President R. A. Hale officiated as chairman for the evening, and seated around the banquet table were the following:—

DeForest Lambert, '99, Salem; John H. Lambert, '98, Lowell; Walter S. Coburn, '97, Lowell; W. O. Hildreth, '87, Lowell; E. F. Simpson, '90, Lowell; John Alden, '77, Andover; Daniel Adams, '06, Lawrence; George L. Wright, North Andover; George F. Hobson, '06, Lowell; John Boyd, '97, Lowell; John A. Faulkner, '76, Lowell; Arthur S. Thomas, '06, Manchester, N.H.; Charles H. Eames, '97, Lowell; William K. Fairbanks, '97, Lowell; Linwood O. Towne, '78, Haverhill; George Bowers, '75, Lowell; Edward B. Carney, '93, Lowell; Henry A. Morss, '93, Boston; George A. Nelson, '77, Lowell; and Richard A. Hale, '77, George W. Hamblet, '88, William F. Walker, '06, W. H. Clough, '04, John A. Collins, '97, John Ashton, James Lanigan, Jr., Philip R. French, '00, P. F. Ripley, '00, I. E. Beach, '94, of this city.

JOHN A. COLLINS, Jr., '97,
67 Thorndike Street, Lawrence, Mass.

TECHNOLOGY CLUB OF NEW BEDFORD

The annual meeting of the Technology Club of New Bedford was held at the home of T. B. Akin on Thursday, November 7. Ten were present. E. B. Hammond was elected president for the ensuing year, and Chauncey G. Whiton a member of the executive committee. A committee was appointed to arrange for the annual dinner in December.

The annual dinner of the Technology Club of New Bedford took place on December 5 at the Wamsutta Club. Thirteen were present, but this did not seem to detract from the pleasure of the evening. Dean Burton was the guest of the club, and gave an interesting talk on the present and future conditions of Tech. President Hammond presided. Those present were Hathaway, Beaman, Pierce, Allen, Lawton, Akin, Whiton, Hammond, Tillinghast, E. Wing, Wade, C. Wing. Stetson, '99, who has been in Portland, Ore., with the lighting company there, is now on his way back after a trip to Honolulu and Mexico.

CHARLES F. WING, JR., *Secretary*,
34 Purchase Street, New Bedford, Mass.

TECHNOLOGY CLUB OF NORTHERN CALIFORNIA

At a reunion dinner in Oakland, Cal., on November 16, twenty-eight Tech men organized a "Technology Club of Northern California," to advance Technology's interests and create a strong Tech fellowship on the coast.

These twenty-eight men represent only a small section of the Institute graduates in that vicinity; but the movement is not only sanctioned, but strongly desired by every Tech man that it has been possible to communicate with.

It is therefore expected that the immediate membership will be over forty. Charles G. Hyde, '96, was elected president. Any communications as to Tech men in this region will be gladly received by H. C. Blake, '07, the secretary of the club.

On November 30 the men of the southern part of the State, following the example of their northern neighbors, organized a similar club, and it is the intention to spread the movement until eventually there is formed an association of the Pacific Coast.

HOWARD C. BLAKE, '06,
2536 Bancroft Way, Berkeley, Cal.

TECHNOLOGY CLUB OF CENTRAL PENNSYLVANIA

The first meeting of the alumni of the Massachusetts Institute of Technology residing in Central Pennsylvania was held at the rooms of the Engineers' Club, Harrisburg, on Wednesday evening, November 6, 1907. The gathering was called by Messrs. L. E. Johnson, '89, and Stephen Badlam, '00.

For a number of years Harrisburg has been the common meeting ground for quite a body of Tech graduates, owing to the fact that its being the capital city of the State has made it the headquarters of the various State departments of water, health, highways, etc. Surrounding it also at various distances are the industrial towns of Steelton, York, Lebanon, Carlisle, and Burnham, which all have their quota of Tech men.

At different times, attempts have been made to effect some organization among the Tech men, but unsuccessfully, largely due to the lack of some suitable meeting-place, until last November, when the Engineers' Club of Central Pennsylvania kindly offered the use of its club-rooms for the purpose.

Postal cards, requesting a meeting of those interested, were sent out to some twenty men, and on the appointed evening sixteen gathered around the board in the grill-room of the club.

Harrisburg was represented by Farley Gannett, '02, K. C. Grant, '02, Paul Hooker, '02, F. E. Langenheim, '02, all of whom are with the Water Supply Commission.

Steelton answered the roll with George P. Vanier, '85, L. E. Johnson, '89, J. W. Campbell, '98, Timothy J. Driscoll, '99, Stephen Badlam, '00, E. L. Chapman, '10, John R. Brownell, '01, Frank A.

Robbins, Jr., '02, Richard V. McKay, '06, Benjamin F. Mills, '07; H. A. Frame, '07.

York was represented by Robert S. Beard.

After some light refreshments the proposition was broached to make the organization a permanent one, and was carried by acclamation. Mr. L. E. Johnson took the chair as temporary chairman, and, after calling the meeting to order, was nominated for president, and Mr. Stephen Badlam for secretary-treasurer; and both were unanimously elected. The secretary was then instructed to prepare a constitution, to be submitted to the members at the next meeting, which it was voted be held some time during the first half of December.

When the short business session was over, the company again applied themselves to sociability, and, with Grant presiding at the piano, made the rooms ring with the Tech songs that are so familiar to the more recent graduates, but which were all new to most of the older ones.

The evening closed with the proposition that the crowd get together again as soon as possible, and everybody went home glad of the opportunity of renewing his associations with "Old Rogers."

STEPHEN BADLAM, '00, *Secretary-Treasurer*,
309 Pine Street, Steelton, Pa.

THE TECHNOLOGY CLUB

The annual meeting of the club was held Oct. 24, 1907. Reports of the treasurer and secretary were read and accepted.

Following the meeting, Professor Samuel C. Prescott, of the Institute, gave an illustrated talk on "The Problem of Milk Supplies for Large Cities." Interest in the talk was increased, owing to the present agitation for purer milk. With the help of lantern slides, which were evidence of much research work, Professor Prescott explained very clearly just what were the factors of the milk problem. He also exhibited samples of the various constituents and forms of milk. The audience contained members and friends directly interested in the milk business. A lively discussion fol-

lowed the talk. On the second evening and the first ladies' night of the season, November 5, Mr. William Lyman Underwood told of his "Journeys with an Indian." These journeys included visits to the cities of Boston and New York, as well as to the retreats of the Maine woods. Beautiful lantern slides were shown of the latter, and the contrast of the strong character of the Indian against the surroundings and civilization of the city was marked and instructive.

On the third evening, November 21, Mr. Henry A. Morss, '93, gave a talk on "The Bermuda Yacht Race of 1907," illustrated by many lantern slides. As he was the winner of the race, the story of how he prepared for it and how it was run was unique.

Dr. Ernest F. Henderson gave a smoke talk on December 17 on "Liberty or Death in the French Revolution." With the help of lantern slides of the numerous but representative original records, monuments, and prints which he had located and studied in various parts of France, Dr. Henderson gave a simple and convincing picture of the terrible ordeals of the Revolution.

On December 31, the fifth evening and second ladies' night of the season, Mr. Henry C. Wilson gave a lecture on "Rome." This was very fully illustrated by stereopticon slides of landmarks, and brought out vividly the life of that ancient city.

ANGELO T. HEYWOOD, '06, *Secretary*,
83 Newbury Street, Boston.

NEWS FROM THE CLASSES

1868.

PROF. ROBERT H. RICHARDS, *Sec.*, Mass. Inst. of Tech., Boston.

In regard to the class of '68 a few members got together and had lunch at Technology Club and attended the field day sports together. They were Hon. Eben S. Stevens, Eli Forbes, and R. H. Richards. They had a very good time talking over old times, and only wished that more of the class could have been present.

1873.

SAMUEL E. TINKHAM, *Sec.*, 60 City Hall, Boston, Mass.

Samuel M. Felton, '73, former president of the Chicago & Alton Railroad, has been elected president of the Mexican Central Railway Company. Mr. Felton is noted as a railroad man, and had been at the head of the Alton road since 1899. In 1868 he began his railroad career, and he has been connected in official capacity with sixteen different railways.

1875.

E. A. W. HAMMATT, *Sec.*, 10 Neponset Block, Hyde Park, Mass.

I understand that Sam Allen is now located in Boston, and that H. L. J. Warren's address is care of Ind. Telephone Company, Salt Lake City, Utah.—I was greatly surprised and pained to learn of the death at Chicago on Nov. 21, 1907, of our classmate Edward A. Handy. Handy was born April 4, 1855, at Barnstable, Mass., and graduated from the M. I. T. in the class of 1875. He spent one year (1877–78) on the instructing staff at the Institute, and then began his railroad work with the Atchison, Topeka &

Santa Fé Railroad. In 1880 he was locating engineer for the Mexican National Construction Company (Southern Division), and in 1881 held the same position on the Northern Division, becoming chief engineer in 1883. In 1888 he returned to the States, and became division engineer on the Lake Shore & Michigan Southern Railroad, being made chief engineer in 1891 and general manager in 1906. He leaves a widow and two sons. A more extended notice appears on page 144.

1877.

RICHARD A. HALE, *Sec.*, Lawrence, Mass.

C. F. Lawton is superintendent of streets and sewers at New Bedford.—W. L. Hallett has returned to his permanent residence at Denver, Col.—The secretary presided at the winter meeting of the Merrimack Valley Technology Club at Lawrence on December 5, when about thirty members were present. Commodore H. A. Morss, '93, gave an account of the yacht race from New York to the Bermudas, illustrated by lantern slides. A detailed account of the meeting is given elsewhere.

1882.

WALTER B. SNOW, *Sec.*, 170 Summer Street, Boston, Mass.

After an illness of only a few days, Edward Gardiner Gardiner died at his home, 131 Mt. Vernon Street, Boston, on Nov. 4, 1907, at the age of fifty-three years. He was born in Boston, and was a son of the late Edward Gardiner. His mother was formerly Miss Mifflin, of a well-known Boston family. Gardiner took his degree in biology, and for a time after graduation taught at the Institute. He served with distinction in connection with the biological laboratory at Woods Hole, Mass., was deeply interested in the project for a Massachusetts Zoölogical Society, and among the first interested in the work and purposes of the Massachusetts Cremation Society. He married Miss Jane Hooper, who survives him, as do also a son

and a daughter.—Rufus F. Herrick gave an illustrated lecture on "Denatured Alcohol," with special reference to its application in the arts, before the regular meeting of the Society of Arts held on Jan. 9, 1908.

1884.

PROF. W. L. PUFFER, *Sec.*, 307 Equitable Building, Boston, Mass.

Gill has recently read a paper upon "The Explosion of Commonly Occurring Substances" before the Syracuse Section of the American Chemical Society. While there, he gave an account of the progress of the Institute before the newly formed Technology Club of Syracuse. He had the pleasure of visiting both the works of the Eastman Kodak Company at Rochester and the General Electric Company at Schenectady.—A very nice letter from Park has been received by the secretary, in which he tells of his doings, and says that the fire and earthquake did not get him, and that he now is in Palo Alto, where he would be glad to see any of the boys who may be out that way.—Puffer gave a very interesting paper on the "Variables of Illuminating Engineering" before the Boston Section of the Illuminating Engineering Society, which gave rise to much discussion, as it dealt with questions as to whether or not any given illumination was "satisfactory" or not to the user, without regard to the theoretical results or expectations.

1886.

PROF. ARTHUR G. ROBBINS, *Sec.*, Mass. Inst. of Tech., Boston.

The class of '86 held a reunion at the University Club, Thursday evening, January 9. The special feature of the occasion was a complimentary dinner given to Dr. Arthur A. Noyes, Acting President of the Institute. Besides Acting President Noyes, there were present Locke, of the Corporation, Bartlett, Clifford, Miller, and Robbins, of the Faculty, and Anthony, Chase, Cobb, Cole, Doe, Jones, Lloyd, Peirce, R. J. W. Smith, S. F. Smith, and

Winsor, making the largest class meeting since graduation. The secretary presented the greetings received from classmates in all sections of this country and from foreign lands. Peirce officiated as toastmaster, and recalled that he acted in a similar capacity at the Freshman meeting of the class a quarter of a century ago. Peirce was in his happiest mood, and succeeded in bringing nearly every one present to his feet for some word of greeting, reminiscence, encouragement, or advice. Noyes gave a very interesting account of student activities, and told to how great an extent they had been developed since our undergraduate days. Locke spoke enthusiastically of the results which have followed, and which are likely to come from the recent alumni representation on the Corporation. Bartlett, Clifford, and Miller gave a hopeful account of the work being done and the improvements made in the courses of instruction. All three praised unstintedly the work of the new President. Bright and pleasing remarks, chiefly of a reminiscent nature, were made by Anthony, Jones, the two Smiths, and Winsor. The meeting ended with rousing cheers for Noyes, for '86, and for Technology.

1888.

WILLIAM G. SNOW, *Sec.*, 1106 Penn Mutual Building, Boston.

Henry J. Horn spent a few days in Boston recently, *en route* to Europe. He has resigned from the Northern Pacific Railway, of which he has been general manager for several years.—Stone & Webster have removed their entire force to their new building, 147 Milk Street, Boston.—B. G. Buttolph and William G. Snow attended the recent meeting of the American Society of Mechanical Engineers in New York.—W. L. Belser has returned from Cuba, where he has been engaged in engineering work on one of the sugar plantations.—Mrs. Lilian G. Whaley (*née* Currier) has removed to 16 Charlotte Street, Boston.—H. C. Moore is now with James Beggs & Co., 109 Liberty Street, New York.—Odin B. Roberts has formed a partnership with George L. Roberts, Reuben L. Roberts, and Robert Cushman, under the firm name of Roberts,

Roberts & Cushman, for the practice of law, particularly in causes relating to patents, trade-marks, trade rights, and copyrights. The offices are at 95 Milk Street, Boston.—William G. Snow is giving a course of lectures on heating and ventilating to the third-year architects at the Institute.

1889.

PROF. W. E. MOTT, *Sec.*, Mass. Inst. of Tech., Boston.

W. M. Beaman has a daughter, aged about nine months. He has recently returned to Washington, D.C., for the winter after a busy season in the field as "inspector of topography,"—a promotion recently made, and one that puts him in charge of topographic work of the Geological Survey in the Southern and South-eastern States, including Oklahoma and Texas. The "Beaman Stadia Arc," manufactured by Gurley & Co., is now on the market.—Colonel Z. W. Bliss was a prominent candidate for the nomination as lieutenant governor of Rhode Island during the late campaign. That his standing among Democrats, as well as in his own party, is high, is clearly shown by the following abstract from the Providence *Journal*:—

It is pointed out by those who are talking of Mr. Bliss for lieutenant governor that his record as a Republican official in his town, Cranston, and as its representative in the legislature, gives him a certain title to higher place. It has been as chairman of the House Finance Committee that his public career has been the most conspicuous. His steady, conscientious attention to the trying duties of that position has saved the State many thousands of dollars (Democrats and Republicans alike, who have tried to coax appropriations out of him for little projects for their respective communities, will bear voluminous testimony to that), and then again it is cited that under his guidance of funds that are allotted by the legislature many worthy projects have been greatly benefited. . . . In many ways Colonel Bliss is talked of with favor, and some of the leading citizens of his town yesterday afternoon hailed it with delight. There he has been right at the head and front of every public movement, and it is generally accepted throughout the town that to him belongs practically all the credit

for getting the cross-town line for the working people of opposite sections of the town.

—The following extract from the *Tech* needs no comment, and will be read by all '89 men with interest:—

Francis R. Hart, vice-president of the Old Colony Trust Company and a former student of the Institute in the class of 1889, was appointed treasurer. He becomes also an *ex-officio* member of the executive committee of the corporation, and will probably become a member of the corporation itself.

—P. R. Hawkins declines to put himself on record at this time, and closes his letter by reference to the old maid, "getting less desirable and more particular."—H. Howard's return to Boston after a summer spent in racing in German and Spanish waters was chronicled in the last number of the REVIEW. A recent paper has the following:—

Henry Howard, of the Eastern Yacht Club, who had charge of the American yachting interests in the recent international races in Germany and Spain, has returned to Boston. In discussing these events, Mr. Howard said that the American boats were beaten at Kiel because they were not fast enough.

"In Germany," he said, "they met boats which had been designed with the lines of our boats of the year before as a guide. The Germans are wonderfully clever, and they turned out boats exactly adapted to the kind of weather met at Kiel in August. That weather is heavy. We had but one heavy-weather boat, the 'Spokane.' In what we would call an ordinary blow she was as fast, I think, as any of the German boats. In Kiel weather she was not.

"One mistake in our boats was the size of the cockpits, which were too large. A small cockpit and high combing are necessary to keep out the sea at Kiel. Our boats were drowned out. The German boats were better built, also, and did not leak.

"The German boats were all well sailed, their crews showing marked ability in handling them in rough weather."

In explaining the American defeat in Spain, Mr. Howard said that it was

due to the fact that the Americans waived an important clause in the agreement; namely, that the boats should be designed and built in Spain.

"We were defeated by boats designed in America, and that took the edge off the defeat a little.

"I think you may fairly say the Spanish match was won by the off-the-wind work. If their sails had been as good as ours, they would have made even a better showing. The king sailed in some of the races, but did not use his suit of American sails presented him last winter by the Eastern Yacht Club, as they were on his old boat 'Mouriscot,' which was not entered.

"Everything in both matches went off most pleasantly, there not being any hitch of the slightest kind. A return match may be sailed in 1908 or 1909. There is no doubt that the Germans will come again. They have offered us the lines of their boats, as we did them ours, and are looking forward with enthusiasm to coming. The Spaniards are also prepared to come."

—The firm of Kilham & Hopkins has recently let the contract for a new high-school building in Salem, Mass. The building "will cost complete about $240,000, and, while fulfilling all the requirements of the school, will thus only require the expenditure of about two-thirds of the appropriation of $350,000, owing to the very economical and compact arrangement of the plan. The city will be able to furnish the building without any additional expense. The proposed building will be built of red water-struck brick with trimmings of terra-cotta, in the Georgian style of architecture, and will stand on an eminence about thirty feet above Highland Avenue, and will be reached by an exedra and handsome steps executed in concrete. It will contain class-rooms and recitation-rooms for 864 pupils, with an assembly hall capable of comfortably seating 1,400 persons. There will be completely equipped chemical, physical, and botanical laboratories, a large room for domestic science, manual training, and mechanical and freehand drawing, and exceptionally fine library accommodations. All the plumbing and heating and ventilating apparatus will be of the most up-to-date description."—Montgomery Rollins has retired from active banking business and is devoting himself to the literary side of finance. He is lecturing on Practical Banking before the Tuck

School of Administration and Finance, Dartmouth College, besides publishing standard works and magazine articles on the above subjects. His books upon Bond Values, etc., have recently been followed by a work entitled "Money and Investments."—G. C. Whipple has in preparation a book on typhoid fever.

1890.

GEORGE L. GILMORE, *Sec.*, Lexington, Mass.

Mr. A. H. Rogers is now residing at 32 Sidlow Road, Brookline, Mass.—Mr. E. S. Worden is at 15 Dey Street, New York City.—Mr. H. E. Hayes is at 43 Summit Avenue, Brighton, Mass.—Mr. A. W. Woodman, who recently removed to Chicago, may be found at 108 Lasell Street.—Mr. William P. Flint is at 5623 Wellesley Avenue, Pittsburg, Pa.—Professor George E. Hale is at the Mt. Wilson Solar Observatory, Pasadena, Cal.—Mr. E. B. Raymond is being congratulated upon the arrival of a small boy in his family.—Mr. H. P. Spaulding has closed his bungalow at Gloucester and is now residing at 17 Strathmore Road, Brookline, Mass., and has also opened a studio at 82 Studio Building, Boston, Mass., this fall.—Colonel Hayden has resigned as director of the Balakala Mining Company.—Under the recent change in the State militia force Major Hayden has been promoted to the rank of colonel and is chief of the pay department of the State militia.—Mr. Guy C. Emerson's address is Corbett, Wyo.—Professor Gary N. Calkins has been giving a course of Lowell lectures, which were finished early in December, on the Protozoa.

1892.

PROF. WILLIAM A. JOHNSTON, *Sec.*, Mass. Inst. of Tech., Boston.

William H. Messenger, who is assistant engineer, Bureau of Highways, Borough of Brooklyn, recently visited the Institute with his bride.—Frederick L. Rhodes, engineer with the American

Telephone & Telegraph Company, has been transferred to the New York office of that company, 15 Dey Street.—Charles F. Wallace, with Stone & Webster, and Dwight P. Robinson, vice-president and general manager Stone & Webster Engineering Corporation, are now located at 147 Milk Street, Boston.—R. H. Sweetser resigned his position as superintendent of Blast Furnace, Algoma Steel Company, Sault Ste. Marie, Ontario, in November, to become superintendent of the Columbus Iron & Steel Company. On his way to Columbus on November 14, he was in the bad wreck on the Canadian Pacific Railroad near Moor Lake, Ontario, and lost his baggage in the burning of the baggage car. Besides his personal effects, notes, records, etc., he lost a solid silver tea service which the employees of the Blast Furnace Department had presented to him the night before.

1893.

FREDERIC H. FAY, *Sec.*, 60 City Hall, Boston, Mass.

1908 marks the fifteenth anniversary of the graduation of the class, and plans now under way for a fitting celebration of the event in June will be announced in due season. An informal class dinner will be held on Saturday evening, March 14, for which notices will be sent to all members. At the annual dinner of the Alumni Association on January 10 the following '93 men were present: S. A. Breed, W. E. Evans, F. H. Fay, G. B. Glidden, H. M. Latham, W. A. Marcy, H. A. Morss, L. W. Pickert, C. W. Taintor, J. S. Wadsworth.—Albert Farwell Bemis is the newly elected vice-president of the M. I. T. Alumni Association for 1908 and 1909.—Charles E. Buchholz is located at Watertown, N.Y., as a dealer in coal, his address being 11 Sterling Street, Watertown, N.Y.—Nathaniel R. Craighill is professor of engineering in charge of the School of Engineering of the University of Montana at Missoula, Mont.—Carleton E. Davis, department engineer of the reservoir department, Board of Water Supply of the City of New York, is located at 189 Fair Street, Kingston, N.Y.—Herbert N. Dawes is

a charter member and director of a new commercial club recently formed in Boston, whose objects are to study and discuss the application of scientific principles to the conduct of business, especially to the sale of goods, to secure for salesmanship recognition as a profession, and to supplement all efforts to make Boston a greater commercial city.—Arthur Farwell gave a lecture recital on American music, December 17, before the Waltham Musical Club.—Ira J. Francis is manager of the Los Angeles office of John A. Roebling's Sons Company at 1932 Hobart Building, Los Angeles, Cal.—Edward M. Hagar, president of the Universal Portland Cement Company, has moved his office from the Monadnock Building to 1434 Commercial Bank Building, Chicago.—George T. Hanchett, consulting electrical and mechanical engineer, is located at 237 Fulton Street, New York City.—Frederick H. Howland, journalist, late war correspondent in South Africa and in China, for many years connected with the *Providence Journal* and later editor of the *Tribune* of that city, is engaged in the peaceful occupation of a planter at Los Palacios, Province of Pinar del Rio, Cuba.—Simeon C. Keith, Jr., for a number of years bacteriologist for H. P. Hood & Sons of Charlestown, now gives his whole attention to his private practice as a bio-chemical engineer. His office is in the Ford Building, 15 Ashburton Place, Boston.—George E. McQuesten is a director and one of the incorporators of the Aëro Club of New England, organized in November last, to promote the interests of ballooning and the navigation of the air. Professor A. Lawrence Rotch, Tech '84, director of the Blue Hill meteorological observatory, is president of the club.—Early in October L. W. Pickert spent a week in the wilds of New Brunswick, moose-hunting. Pickert says he shot his moose, although by some of his friends it was said to be "only a dream."—The address of William S. Resor, general foreman of the construction department of the Chicago Telephone Company, is 435 South Humphrey Avenue, Oak Park, Ill.—Arthur A. Shurtleff, landscape architect, 22 Congress Street, Boston, is consulting architect for the Metropolitan Improvements Commission, a commission appointed last year by the State to investigate and report upon the development and beautification of the Boston

Metropolitan District.—Charles R. Walker is chemist with Richards & Co., Limited, the Boston Artificial Leather Company, and the Celluloid Zapon Company at Stamford, his home address being 54 Suburban Avenue, Stamford, Conn.

WALTER SHERMAN WHITING

Walter Sherman Whiting, who attended the Institute for over a year as a member of the class of '93, met with a distressing accident October 30, and died Nov. 2, 1907. Whiting was born in Camden, N.J., Oct. 11, 1866. His parents were Stephen Betts Whiting and Kate Burr Whiting. When still a young boy, his family moved to Pottsville, Pa., and, shortly after he became of age, to Cambridge, Mass. In the autumn of 1890 he entered the Sophomore Class at M. I. T., as a special student in the civil engineering department. He spent about three terms at the Institute, and left some time in the autumn or winter of 1891–92. While at Technology, Whiting's many talents made him much sought after by the different musical, athletic, and social organizations. He was a member of the Glee Club, Theta Xi Fraternity, and the K. O. S. Sophomore Society, and he played right half-back on '93's Sophomore eleven. He was always a genial and interesting companion, particularly to those who, like himself, were lovers of music.

After leaving Technology, Whiting went to Calumet, Mich., as a member of the engineering corps of the Calumet & Hecla Mining Company, and remained at this work until the winter or spring of 1894. In March of that year he married Miss Maude A. Clinton, daughter of the late Charles Clinton, of Hoboken, N.J. He then went to Shamokin, Pa., and joined the mining engineering corps of the Philadelphia & Reading Coal and Iron Company. Later he was transferred by that company to the Pottsville district. After a time he left that company, and joined a friend in forming and conducting the Pottsville Supply Company.

While still at Pottsville, in September, 1900, he received and accepted an offer to go to Milwaukee, Wis., as treasurer of a com-

pany that was being organized there. Although this company did not materialize, shortly after reaching Milwaukee Whiting became interested with a Mr. Brown in organizing, financing, and operating the Brown-Corliss Engine Company, with shops at Corliss, Wis. He was first treasurer and, later, president of this company. Some time in 1905 he lost his office in the company through a change in its ownership. From that time until his death he owned and operated a storage warehouse in Milwaukee.

On Wednesday evening, Oct. 30, 1907, Whiting remained late at his warehouse, with a number of his men, on account of an unusual volume of business. He was driving home from there alone, when in some way he was caught between two tracks, and was run down by a freight train. Apparently, the accident was not known to the crew of the train, as he lay there, exposed to the driving rain, probably for about three hours, he being discovered, in an unconscious condition, by railroad employees about midnight. He was immediately taken to a hospital. Both legs were badly crushed and were immediately amputated, one just above and the other below the knee. Although he recovered consciousness, he could not survive the shock of the accident and the operation, and he passed away Saturday morning, November 2. Funeral services were held at his parents' residence in Cambridge. He leaves a widow, two sons, and two daughters. A. F. B.

[illegible]

[illegible]

[illegible]

America the last time, he came by way of the Trans-Siberian Railway to Russia, and thence to England and across the Atlantic. Chace has also spent considerable time in China, has visited India, and is in general well informed and familiar with affairs in the East. He expressed the opinion that the sending of the fleet around the Cape to the Pacific is a wise move on the part of the government. Of the others present, Cheney is chief draughtsman for Stone & Webster, Lawrence is superintendent of the Thomas G. Plant Shoe Factory, Piper is superintendent of the Boston Rubber Shoe Company, Tenney controls the lighting of Malden and other suburbs on the north side of the city, and Breed and Prescott still retain their positions at the Institute.—George Taylor is connected with the construction department of the General Electric Company of Schenectady, and has recently been engaged in work for the company in Illinois.—H. A. Swanton has an office as mechanical engineer at 123 Oliver Street, Boston. He also writes poetry from time to time, and has recently written some verses entitled "Technology for Aye," which fit the swing of our now famous "Stein Song." —N. H. Janvrin is located at Walden, N.Y., on the work of the new water supply for Greater New York.—McKibben is reported as enjoying his new duties as professor of civil engineering, and has become very popular, according to private advices received by the secretary.—Tufts has become an exponent of the outdoor life, and has a farm at Meredith, N.H., where his family spends the greater portion of the year. With his large interests in Boston and at Pinehurst, N.C., Tufts leads a very active and busy life.—Kirk has removed from Cleveland to Brooklyn, and his present address is 100 Buckingham Road.—Meade has his office at 2 Rector Street, New York, having moved from 26 Broadway.—Bailey is now mechanical engineer for the Mellin's Food Company of Boston.— C. H. Johnson has established a very enviable reputation because of the very skilful service he rendered in the preparation of the Panama Canal relief map exhibited at the Jamestown Exposition. In addition to this Johnson had charge of the Massachusetts exhibit. The members of the class will also congratulate him on his marriage, which took place recently.—R. D. Reynolds is now residing

in Sharon, Mass.—Sherman writes: "Born Oct. 17, 1907, Barbara Sherman. We now have a fine little family, consisting of two girls and a boy. . . . Change address to 206 Park Street, Akron, Ohio."—W. A. Soley has removed his business office to 444 Harrison Avenue, Boston.—J. H. Gardner is now with the New England Steamship Company at Newport, R.I.—H. N. Parker is with the United States Geological Survey. For nearly a year he has been located in Kansas, making a special study of the waters of that section, but his permanent address is in Washington.—A. M. Burtt is also in Washington, in the office of the supervising architect.—Coolidge has left New York, and is now to be addressed at 259 South Clinton Street, Chicago.—Noa is studying and travelling abroad. When last heard from, he was living in Charlottenburg, Berlin.—Prescott attended the meetings of the American Association for the Advancement of Science and the affiliated societies held in Chicago the week after Christmas. He presented three brief papers at the meetings of the Society of American Bacteriologists, of which he has been for two years secretary. As he has now retired from this position, it is hoped that he may give more time to the affairs of the class of '94. While in Chicago, he was splendidly entertained by Price. As a rubber expert, Price has developed a splendid business, both in manufacturing and consulting lines. He retains his old-time enthusiasm for Tech, along with a very broad interest in general affairs. Last summer Price took a trip to Alaska and the Pacific Coast, and had a most enjoyable outing. He expresses great interest in ballooning, and is a member of the Chicago Aëro Club.

1895.

H. K. Barrows, *Acting Sec.*, 6 Beacon Street, Boston, Mass.

Changes of address are reported as follows: F. C. Schmitz, care I. T. Williams & Sons, 11th Avenue and 25th Street, New York.—T. M. Lothrop, Indiana Steel Company, Gary, Ind.—John W. Cooke, Yuba City, Cal.—W. D. Bliss, 15 Second Street, San Francisco, Cal.—C. A. Meserve, 209 California Avenue,

Avalon, Pittsburg, Pa.—F. C. Green, 42 Broadway, New York. —C. L. Parmelee, 90 West Street, New York.—W. H. Winkley, 93 Water Street, Boston, Mass.—C. F. Tillinghast, Box 892, Providence, R.I.—L. W. Ballou, 17 Harris Avenue, Woonsocket, R.I.—S. K. Clapp, West Shokan, N.Y.—J. W. Cooke, 12 Trapelo Road, Waltham, Mass.—A. W. Drake, 768 Bourse, Philadelphia, Pa.—F. A. J. Fitzgerald, P.O. Box 29, Niagara Falls, N.Y.—P. L. Gilbert, Box 592, Andover, Mass.—J. H. Gregory, 506 American Savings Bank Building, Columbus, Ohio.—H. Kotzschmar, Jr., Room 142, Treasury Department, Washington, D.C.—J. C. Sherman, 1734 Beacon Street, Brookline, Mass.—R. K. Sheppard, Pennsylvania Building, Philadelphia, Pa.—R. N. Wheeler, 236 Main Street, Poughkeepsie, N.Y.—A. L. Simmons, Humane Hall, Albany, N.Y.—J. W. Cushing, 1577 Beacon Street, Brookline, Mass.—J. H. Gardiner, 1328 Candler Building, Atlanta, Ga.—W. T. Hall, 1025 Beacon Street, Brookline, Mass.—F. W. Harris, 71 Prospect Street, Little Falls, N.Y.—H. A. Holdrege, care Omaha Electric Light & Power Company, Omaha, Neb.—R. Morey, Chemical Building, St. Louis, Mo.—S. P. Hunt, 747 Union Street, Manchester, N.H.—C. W. Hayden, New England Telephone & Telegraph Company, 48 Oliver Street, Boston, Mass.—F. A. Bourne, 70 Kilby Street, Room 96, Boston, Mass.—E. P. Schoentgen, Council Bluffs, Ia.—S. S. Clark, 448 Security Bank Building, Minneapolis, Minn.—G. H. Matthes, 117 East Jefferson Street, Colorado Springs, Col.—R. H. Rich, Chief Engineer's Office, North Station, Boston, Mass.—C. F. Hatton, 358 Bunker Hill Street, Boston, Mass.—C. G. Badgley, P.O. Box 67, Seattle, Wash. —Miss K. A. Bowen, 63 Crescent Avenue, Buffalo, N.Y.—D. P. Hart, 3 West 29th Street, New York.—E. H. Clapp, 49 Federal Street, Boston, Mass.—G. G. King, 122 Munroe Street, Chicago, Ill.—Notice has been received of the death of Sanford Tappan at Manchester-by-the-Sea, Mass., on March 22, 1907.

1896.

E. S. MANSFIELD, *Sec.*, 39 Boylston Street, Boston, Mass.

J. W. Stickney was married to Jessie William Crampton on Oct. 22, 1907, at Indianapolis, Ind. Their home address is 333 West 8th Street, Anderson, Ind. Stickney is district superintendent with the Central Union Telephone Company.—John Tilley, formerly with the New York Telephone Company, has associated himself with the Whitney-Steen Company, engineers, contractors, and builders, with main office at 135 Broadway, New York City.—Conrad H. Young, of the Armstrong Cork Company, spent seven months in France, England, Scotland, and Ireland, in the interests of the above company, returning home to Chicago about the middle of October, 1907.—Nathan H. Smith announces that he is now connected with the Tel-Electric Music Company, with headquarters at 405 Boylston Street, Boston. His residence is Bromley Court, Broadway and Prescott Street, Cambridge, Mass.—Reginald Norris, of the International Banking Corporation of San Francisco, Cal., has taken up his residence at 415 Montgomery Street, San Francisco.—John L. Matthews, formerly of the *Youth's Companion*, has gone West on a prospecting tour. He is interested in the subject of shipping on the Mississippi River.—H. C. Lythgoe has been promoted from assistant analyst to analyst of the State Board of Health of Massachusetts.—On Dec. 17, 1907, Marshall O. Leighton read a paper before the Boston Section of the American Institute of Electrical Engineers on "The Relation of Forest Cover to the Development of Water Power, especially in the Southern Appalachian Region."—We are giving below the latest addresses of the following men: M. A. Sears, Room 56, 45 Broadway, New York City.—F. A. Thanisch, Brownell, Ariz.—M. L. Fuller, 104 Belmont Avenue, Brockton, Mass.—R. S. Hardy, Hynes, Cal.—Henry Gardner, 210 Noble Avenue, Crafton, Pa.—A. J. Bowie, Jr., 827 Eddy Street, San Francisco, Cal.—C. A. Wentworth, 216 Bloomingdale Avenue, Wayne, Pa.

1897.

JOHN A. COLLINS, Jr., *Sec.*, 67 Thorndike Street, Lawrence, Mass.

Mr. and Mrs. Luzerne S. Cowles are receiving congratulations on the birth of their second son, Charles Hyde, born Aug. 30, 1907.—R. A. Swan, who is doing newspaper work in New Bedford, Mass., has been appointed one of the license commissioners by Mayor Ashley of that city.

1898.

PROF. C.-E. A. WINSLOW, *Sec.*, 157 Walnut Street, Brookline, Mass.

The first informal reunion of the season was held at the Technology Club, Friday, November 29. Among those present were Goodrich, Blanchard, Russell, C. H. Smith, Godfrey, Kimball, Edgerley, Wright, Winslow, Johnson, Pease, H. T. Smith, A. H. Tucker, Learned, Milliken, Perry, Russ, Roberts, J. T. Robinson, and Major Bigelow. Dr. Dewey was the guest of the evening, and spoke of the growth of the Institute since 1898. The number of students has not changed very materially in ten years, but the funds of the school and the number of the instructing staff have greatly increased. The growing proportion of graduate students (now 1 in 7) and of students from outside the State of Massachusetts are notable features in the attendance. The establishment of new courses for graduate students leading to the M.S. degree was mentioned as an important addition to the curriculum. Dr. Dewey emphasized his belief, however, in the mission of the Institute as primarily an undergraduate school.—W. G. Smith is now with the Trussed Concrete Steel Company at 28 Congress Street, Detroit.—Seidensticker is in the chemical laboratory of the Arbuckle Brothers at the foot of Pearl Street, Brooklyn.—Godfrey has just been called to a position at the head of the Department of Science in the Girls' High School of Practical Arts, which opened this fall in Boston. Another of his "City" papers, "The City and its Milk Supply," was published in the August *Atlantic*.—Le Moyne is now at

Hagerman, Ida.—Strickland writes from Porto Rico: "Here is luck. A baby girl was born to me Nov. 13, 1907, in Bridgburg, Ontario, Canada, and named after my mother, Clara Turner Strickland."—Campbell is in Berlin at Kaiser Wilhelm Strasse, 49.—Wadsworth is located for a time in Boston on special work for the Metropolitan Improvement Commission. His address is 69 Westland Avenue.—Gardner is in the advertising department of *Collier's* at 416 West 13th Street, New York.—Jacoby writes to the secretary, under the heading of the American Dyewood Company, 84 William Street, New York:—

Am still with the above concern, and have a very congenial position, which is also gratifying from a financial point of view. Am living in a small Jersey town called Rutherford, on the celebrated Erie, the road that believes in safety (?) rather than speed.

Outside of business hours my time is taken up with the youngsters, of which there are two (boys) in the house, and with an Emerson-Angelus piano.

—Chace writes from Tucson, Ariz., as follows:—

I have been out in the "wild and woolly West" for about two years, and haven't been home for three years; but I hope to be back in Boston next summer to attend the celebration. Tech men are "scarce articles" in this section of the country, but I have working with me Crane, '07, and Thornton, '07, and I understand that Professor Goodrich, of the University of Arizona, is a Tech man, so Technology is fairly well represented in this town. My work here is in connection with the building of the Cananea, Yaqui River & Pacific Railroad in the Republic of Mexico, where we have had about 5,000 men and 2,000 teams at work on the construction of our new line, which will ultimately be about 1,200 miles long. I don't suppose you would have room for such a big line in the East; but out here we are not hampered by lack of room, for we can look off over the desert for nearly a hundred miles and see practically nothing to obstruct our view unless it be a range of mountains, perhaps 10,000 feet high. So, although I am a long way from Boston, I hope I may see you and the rest of the boys next summer.

—Just before the informal reunion Zimmermann wrote as follows from New Orleans:—

Maybe I don't wish I could be with you fellows on Friday night! It would certainly do my heart good to see you and Boston again. I got as far as New York on a business trip two weeks ago, but I couldn't get to Boston because of lack of time.

By the way, I organized the Tech men here at New Orleans into an organization last May,—or at least started the movement,—with the result that the Technology Club of the South was formed. We had a dinner on Decoration Day, and intend to have a second one to-morrow night. There are about twenty or so Tech men here at New Orleans and immediate vicinity, and we ought to have at least ten or twelve on hand to-morrow. Sears and myself are, I believe, the only '98 representatives. It is our intention, too, to get up a dinner before long of all the college men here at New Orleans; that is to say, co-operate with the Harvard, Yale, Princeton, etc., clubs with a view to having a joint dinner some time. Whether it will work or not will have to be seen.

I expect to give up New Orleans as my home in a week or two. The Bridge Company has just appointed me to take charge of the Atlanta office, and to handle this New Orleans district as well. My headquarters will be at Atlanta (Candler Building), and I will have some one here in this office reporting to me at Atlanta. So you see Atlanta will be my place of abode in the near future, but I'll probably have to come over here to New Orleans every now and then.

1899.

HERVEY J. SKINNER, *Sec.*, 93 Broad Street, Boston, Mass.

B. R. Rickards is managing editor of the *American Journal of Public Hygiene*, which is the official organ of the Massachusetts Association of Boards of Health and the American Public Health Association.—R. W. Stebbins has completed the construction work at the Malden-Melrose Gas Light Company, and has returned to Springfield, Mass.—J. H. Walton is professor of chemistry at the University of Wisconsin.—Etheredge Walker was in Boston the early part of October, and called on several of his friends. Walker's present address is Idanha Hotel, Boisé, Ida.—On November 12 a daughter, Harriet Parker Woollett, was welcomed into the home of Mr. and Mrs. John W. Woollett at Albany, N.Y.—E.

Sutermeister recently resigned his position as chemist for S. D. Warren & Co., paper manufacturers, located at Cumberland Mills, Me., and is now with the United States Bureau of Forestry, where he has charge of the experimental plant, formerly located at South Boston, and where a study is being made of the adaptability of various pulp woods to the sulphite process. His address is 1530 Pennsylvania Avenue, S.E., Washington, D.C.—Philip Stockton is president of the City Trust Company, 50 State Street, Boston.—T. W. Bailey is now located with Swift & Co., 34 North Market Street, Boston.—C. M. Swan has been elected vice-president of the Harvard Graduate Club. Swan has a year's leave of absence from the Institute, and is taking graduate work at Harvard.—H. M. Keys is with the Albany Home Telephone Company, Albany, N.Y.—W. E. Parker is with the United States Coast and Geodetic Survey, and is now stationed in the Philippine Islands at Manila.

1900.

H. E. Osgood, *Sec.*, 34 Pearl Street, Boston, Mass.

In the retirement of Dick Wastcoat, whose duties as treasurer of the Ellis-Chalmers Company called him to New York City, where the company has opened offices, the class loses the services of an able and efficient secretary.—The last issue of the Review went to press without news from 1900 on account of the inexperience of the new secretary in relation to the date of issue. However, we trust that it will not happen again. A strenuous kick, interposed with many blanks and dashes, was received from Chalmers on account of this neglect.—Several 1900 men were observed at the Yale-Harvard game at the Stadium. It was an ideal day, and those who were fortunate enough to be present enjoyed a good game.—A communication was received from John F. Wentworth, who states that his oldest child was born Sept. 3, 1902. "Can you beat it?"—A. B. White, Associate M.A.S.C.E., has with William F. Bixby formed the firm of Bixby & White, civil and hydraulic engineers, with offices in San Fernando Building, Los Angeles,

Cal., and are making a specialty of structural steel and reinforced concrete construction, irrigation and sewage systems.—N. J. Neall, after a year and a half of activity as a consulting electrical engineer at 12 Pearl Street, Boston, has formed a partnership with Percy H. Thomas, '93, under the name of Thomas & Neall, with offices in New York and Boston. Thomas has been associated for fourteen years with the Westinghouse Electric & Manufacturing Company, and, later, on special development work with the Cooper-Hewitt Electric Company. Readers of electrical literature are familiar with his contributions, which have been both frequent and important. The new partnership is a natural outcome of an association formed by Neall with Thomas shortly after Neall's graduation, which, save for a few years of separation due to a difference of interests, has continued ever since. Neall is delighted to be able to announce this arrangement, and looks forward with great anticipation of the future. Neall's interests have been varied and interesting, and have included important investigations in lightning phenomena and plant operation and advice on the electrical features of hydro-electric developments, among which is a large Southern proposition,—the Rockingham Power Company at Rockingham, N.C., which will ultimately generate some 24,000 horse power, and transit it at 60,000 volts in two parts on respective branches, approximately 100 miles in length.

1901.

R. L. WILLIAMS, *Sec.*, 30 Waban Hill Road, Chestnut Hill, Mass.

As announced in the last REVIEW, Ralph H. Stearns has been called to New York, and I being assistant secretary, it now devolves on me to take up the work of secretary. I will try to devote as much of my time to the work as possible. In looking over our records, I find there are many of you fellows whom we have not heard from since graduation. What are you doing? Are you married? How many children have you? I wish you would take a few minutes and write to me. I am sure it would be interesting

to your classmates. I want to keep the class awake, but I can do so only with your support. Write now before you forget it.— It is with keen regret that I have to announce the death of one of our classmates, Lowell Bosworth Wilder, who was struck by lightning and instantly killed at Minersvale, Utah, October 17. Wilder graduated from the Newton High School in the class of 1896 and from the Institute in 1901. After his graduation he went immediately to Utah, taking a position as assistant superintendent at the mine of the Uintah Copper Summit Company near Vernal, Utah. In a few months he became acting superintendent, and later on manager of the mine, and remained there until 1905. During 1905 and 1906 he did a good deal of prospecting and exploring on the Green River in connection with the so-called Black Sands, and later he went to Salt Lake City and was for some time associated with the Newhouse interests. His stay at Minersvale was to be a temporary one, as he had a very responsible position that was to call him from there in a short time. On the afternoon of October 17 an electric discharge of great violence passed through the mining camp at Minersvale, stunning a number of men in the boiler-house, shocking severely one of the waitresses in the mining boarding-house, stopping the foreman's watch, and striking Wilder, who was standing in the door of the assay office, killing him instantly. He is survived by a mother, sister, and three brothers. He was a young man of most lovable nature, spotless character, and marked ability. Every prospect of a bright and even brilliant future seemed to be his. By his untimely death our class has lost one of its best men.— The secretary ran across Archibald H. Wilson a short time ago. He has a responsible position with the Stone & Webster Engineering Corporation.—William J. Sweetser has given up his position as professor at the Mount Allison University, and is now located in Boston.—Henry R. Gilson has recently returned to Boston from the Great Lakes, where he has had charge of the equipment of some of the large lake boats with submarine signal apparatus. He is favorably impressed with the West, and thinks there are great opportunities there for Tech men.—I find there are sixty-seven of our class living in or near Boston. With such a number as this

more should show up at our class dinners. They are not the stiff, formal affairs some of you may think who have never attended. Try the next one, and you will want to come again.—The following changes in address have been received: Norman L. Skene, Bedford, Mass.—R. B. Morton, 29 Fairfield Street, Montclair, N.J.—W. W. Dow, 147 Milk Street, Boston, Mass.—F. B. Driscoll, 15 Dey Street, New York City, N.Y.—F. D. Chase, 1 Park Row, Chicago, Ill.—J. P. Catlin, 48 Mall Street, West Lynn, Mass.—F. R. C. Boyd, 40 Ocean Avenue, Lynn, Mass.—W. G. Blauvelt, 15 Dey Street, New York, N.Y.—W. I. Bickford, Frick Building Annex, Pittsburg, Pa.—William C. Arsem, Research Laboratory, General Electric Company, Schenectady, N.Y.—E. H. Callahan, 164 Main Street, Salt Lake City, Utah.—J. T. Scully, 53 Royal Street, Allston, Mass.—J. A. Trott, 1 Lincoln Hall, Trinity Court, Boston, Mass.—C. L. B. Anderson, 1622 Candler Building, Atlanta, Ga.—Miss G. MacLeod, Technical High School, Springfield, Mass.—Rev. George A. Hall, McHenry, No. Dak.—C. R. Hammond, 136 Liberty Street, New York, N.Y.—A. W. Higgins, 1100 Times Building, St. Louis, Mo.—W. G. Kelley, 139 Adams Street, Chicago, Ill.—Preston Player, 15 State Street, Boston, Mass.—G. L. Mitchell, 15 South 5th Street, Minneapolis, Minn.—L. A. Miller, 360 Broad Street Station, Philadelphia, Pa.—C. F. Willard, 1340 Girard Street, Washington, D.C.—R. Whitman, United States Navy Yard, League Island, Pa.—R. W. Wight, 148 Henry Street, Brooklyn, N.Y.—F. W. Smith, Big Four Building, Cincinnati, Ohio.—W. A. Read, 1496 Bedford Avenue, Brooklyn, N.Y.—Professor W. M. Curtis, College Street, Orono, Me.—L. du Pont, P.O. Box 303, Wilmington, Del.—G. P. Shute, 85 No. High Street, Columbus, Ohio.—E. P. Beckwith, Garrison, N.Y.—A. K. Isham, 1609 14th Avenue, N.W., Seattle, Wash.—F. W. Coburn, Box 114, Duquesne, Pa.—T. F. Lange, 233 Warburton Avenue, Yonkers, N.Y.—R. E. Dow, Melrose, Mass.—J. C. Woodsume, Houghton, Mich.—H. P. MacDonald, foot of Pine Street, Jersey City, N.J.—E. J. Proulx, 112 North Broad Street, Philadelphia, Pa.—H. C. Morris, Box 214, Goldfield, Nev.—H. T. Blanchard, 4 East 39th Street, New York, N.Y.—Charles I. Auer, Estacion Pedri-

ceña, Durango, Mex.—Professor F. H. Sexton, Nova Scotia Technical College, Halifax, N.S.—J. E. Philbrick, 46 Centre Street, Brockton, Mass.—A. W. Peters, 15 Landseer Street, West Roxbury, Mass.—C. P. Rockwood, 1220 North Alabama Street, Indianapolis, Ind.—O. H. Perry, Jr., 93 Federal Street, Boston, Mass.—L. E. Crouch, 164 High Street, Boston, Mass.—Miss A. M. Courtney, 144 Keap Street, Brooklyn, N.Y.—F. F. Dorsey, 39 Cortlandt Street, New York, N.Y.—V. E. Lacy, 900 Water Street, Toledo, Ohio.—A. A. McInnes, 95 Sawyer Avenue, Dorchester, Mass.—J. L. Parke, 605 South Thayer Street, Ann Arbor, Mich.—W. S. Pepperell, Gillon Block, Milford, Mass.—J. M. Hood, Jr., 1008 Continental Trust Building, Baltimore, Md.—F. H. Pough, 149 Columbia Heights, Brooklyn, N.Y.—F. K. Baxter, Mina, Nev.—F. J. Dulude, 375 Jefferson Avenue, Brookyn, N.Y.—William J. Sweetser, 60 State Street, Boston, Mass.—R. E. Bruce, 688 Boylston Street, Boston, Mass.—Miss M. P. Anderson, 435 West 123d Street, New York, N.Y.—Charles T. Lincoln, foot Pearl Street, Brooklyn, N.Y.—H. W. Chambers, 550 Park Avenue, New York, N.Y.—C. M. Culp, 428 Pioneer Building, Seattle, Wash.—R. M. Derby, 111 Broadway, New York, N.Y.—Dr. N. A. Dubois, Case School of Applied Science, Cleveland, Ohio.—G. F. Fisk, Room 13, City Hall, Buffalo, N.Y.—G. L. Harris, 196 Main Street, Easthampton, Mass.

1902.

F. H. HUNTER, *Sec.*, 75 Park Street, West Roxbury, Mass.

Owing to the early appearance of the Class Record Book, the notes for this number of the REVIEW have been reduced to an account of recent gatherings. Such individual matters as engagements, marriages, and babies, are all duly set forth in the book, which should follow quite soon after this number reaches its readers. On Friday, the 15th of November, there was an informal gathering of '02 at the Tech Union. Twenty-eight men sat down to dinner, which makes it the largest meeting, except the June reunion for

some years. After the edibles were successfully concealed in our midst, the president and secretary made some of their usual innocuous remarks, and then Hooker was turned loose on the "Stein Song." A vaudeville artist furnished some enjoyable sketches; but, with Haworth at the piano, Nick at the punch ladle, and Hooker on his feet, the class had quite a team of its own. The evening was passed with song and fun. Those on hand were Ames, Ballard, Boardman, Collier, Fisher, Fitch, "Steve" Gardner, George, Haworth, Hooker, Hunter, Magrane, Mahar, Mitchell, Moore, Nickerson, O'Neill, Patch, Adrian Sawyer, Sears, Shedd, Stillings, Walker, Wemyss, Wetherbee, R. F. Whitney, Whittet, and "Doc." Williams. —On the 16th of the same month, at a gathering of the Northwestern Association, a good turn-out of the '02 men in Chicago took place. "Pete" Currey, Hervey, Jackson, Lockett, Nash, Wesson, and L. E. Williams were noted. Such a good showing promises well for a strictly class gathering later on. Later in the season there will be meetings in both New York and Chicago, and again in Boston.

1903.

WALTER H. ADAMS, *Sec.*, Polytechnic Institute, Brooklyn, N.Y.

The new constitution has been sent out to all members of the class who are in good standing. After the election of the new officers in January, copies of the constitution will be sent to all persons who have ever been members of the undergraduate organization. Under the revised constitution it is hoped that more interest will be aroused and '03 will wake up.

There was an informal class dinner in Boston on December 7, but the secretary has received no report and so cannot give any further information.

The following changes of address have been received: Williams has returned from Ecuador, and may be addressed at 89 Federal Street, Salem, Mass.—Macdonald is now with the Union Metallic Cartridge Company at Bridgeport, Conn.—Lyons has returned to New York, and his address is 138 Liberty Street, New York, care

of Otto Gas Engine Works.—Foster is now with the Union Light, Heat & Power Company at Covington, Ky.—Eaton's address is 151 Warren Street, Newton Centre, Mass.—Endres is with the American Telephone & Telegraph Company at 15 Dey Street, New York.

1904.

R. A. WENTWORTH, *Sec.*, Saylesville, R.I.

M. L. EMERSON, *Res. Sec.*, 161 Devonshire Street, Boston, Mass.

As may be seen by the heading, Wentworth was the result of the recent class election. I have donated to Emerson the duty of gathering all '04 news that reaches Boston. Please keep him busy. At the time of writing we have held office about two weeks. Our items of interest are therefore few, and some of them are almost decrepit.—Lang's health is much improved since the secretary's responsibilities have fallen from his shoulders. He is still working on the new Michigan Central Railroad tunnel under the Detroit River from Detroit to Windsor, Canada. It is a concrete two-track tunnel. Lang is division engineer, and has charge of 2,800 feet of approach tunnel on the Canadian side. He bought a pair of rubber boots in Detroit, but had to pay duty on them before they could be worn in Canada.—Frank Davis also is in Detroit with the Detroit Carbuilding & Equipment Company, working for his brother (a Tech man), who is manager of that concern.—A. P. Weymouth was married Oct. 30, 1907, at Hudson, Ohio, to Miss Ida May Myers.—Last June Willard hung out his shingle in Washington as consulting mechanical engineer. He has had some good contracts, including the design and erection of several government buildings. The best contract of all was made November 26, when he was married, the bride being Miss Sarah Lamborn.—Pete Boggs was in poor health last spring as result of fever caused by his stay in Mexico, and was at home for some time.—Schaefer is in partnership with another Tech man in Buffalo in the leather goods business. They have added recently a side line in pottery.—Lee Phillips was married out West, but is now back in Boston with

French and Hubbard.—Chandler is still connected with the Boston office of the Factory Mutual Fire Insurance Company. At last reports he was on a trip through Connecticut and South-western Massachusetts, inspecting belt-ways, on which the insurance requirements are to be, or just have been, changed.—After taking a Ph.D. at Zürich and studying at the Cavendish Laboratories, Cambridge, England, Comstock is now back at the Institute teaching physics.—Tammie Rockwood and Murray (who was with us for about a year) are with the Eastern Expanded Metal Company in Boston. Tammie spent the summer at Provincetown, supervising the expanded metal reinforcement work on a new concrete building.—Haraden is still with the General Electric Company at Lynn. He was married in June, and is living at 111 New Park Street, Lynn.—The last Sunday I was in Boston I tried to locate Cy Ferris. It was cold and snowy, but Cy was preparing for next summer, as he was off somewhere, scraping his boat. He is in Stone & Webster's insurance department. It is not true that he has lost weight.—Mert Emerson vacillates between the pneumatic department of the Lamson Consolidated Store Service Company and the mail tube service of the American Pneumatic Service Company,—two closely allied corporations. His work has taken him recently to Chicago twice, also to St. Louis and New York.—H. W. Stevens is superintendent of overhead construction for the Boston Edison Company.—Charlie Homer was married last June. Within a month he was sent to San Francisco by Stone & Webster, and has been there ever since. He expected to get home for Christmas.—R. B. Sosman, who for some time has been chemist on the staff of A. D. Little in Boston, won last June the degree of Doctor of Philosophy from the Institute.—On March first '04 received a new member in the person of Mary Jane, daughter of E. J. Wilson. The secretary vouches for her as a credit to the class.—You may remember that Charlie Barrett wouldn't take a girl to our Prom. for fear that she would think that she was "it." He is now Married. How we do change!—Holcombe and W. J. Gill, Jr., recently took Patent Office exams., and struck high C. They are now assistant examiners at Washington. I thought that Holcombe was wedded

to automobile work, but he may be headed towards automobile patent law.—Joe Crowell was married last October, and it is reported that Rapier and Harry Rollins are married, but further details are missing.—Ralph Ingram was at one of the American Woollen Company's mills in Providence, where I used to meet him and Mrs. Ingram occasionally on a Saturday afternoon. He is now superintendent of the Prospect Mill at Lawrence.—Fred Pierce is engaged to Miss C. Louise Turner, of Brockton, Mass. They will be married on Jan. 1, 1908, and will live on College Hill, Beaver Falls, Pa., where Pierce is located with the Pennsylvania Bridge Company.—H. H. Groves is with the Boston & Albany Railroad.—Alfred Peabody is treasurer of the Stirling Manufacturing Company of Salem, Mass. This company makes rubber substitutes and insulating material.—Kalmus and Willard were shaken out of their private school in San Francisco by the earthquake. Kalmus is now at the Institute. He says that, when he and Comstock were at Zürich together, working for their Doctor's degree, they had a marked advantage over the other men there, due to the superior preparation of the Massachusetts Institute of Technology. How's that for a direct comparison with other schools?

1905.

GROSVENOR D'W. MARCY, *Sec.*, 246 Summer Street, Boston, Mass.

The following fellows were in Boston during the holidays: Joe Daniels, B. L. Johnson, J. T. Glidden, Alden Merrill, Louis Robbe, and V. H. Paquet. The Boston '05 club dinners continue to be held at the Technology Club on the second Tuesday of each month. '05 men coming home, remember the date, or call up Marcy, Main 1837, on the 'phone.—Chester H. Butman has left the General Electric Company, having finished the "course" there, and is now an assistant in the Physics Department at Tufts College.—G. F. Parsons, who has been in Boston during the fall, has been assigned by the Stone & Webster Company to the Woonsocket Electric Machine and Power Company, Woonsocket, R.I.—Thomas McC.

Gunn has left the University of Maine, where he has been an assistant, and is now at Fore River, doing estimating work.—T. H. Files is with the Pennsylvania Tunnel & Terminal Company, at 345 East 33d Street, New York City.—It is reported that J. E. Barlow and W. C. Pickersgill have had a substantial advance in their rating as assistant engineers with the New York Board of Water Supply.—W. S. Richmond is a junior engineer on the Great Lakes Survey, and has been located at Niagara Falls since last summer.—Charlie Clapp has come back to his first love, and is now with the Geological Department at the Institute.—The notice of the engagement of George C. Thomas to Miss Marie Honer, of Bridgeport, Conn., was received just too late to appear in the last REVIEW. Thomas is at the Bridgeport plant of the Singer Manufacturing Company, and has charge of the generation of heat, light, and power. Since leaving the Institute, he has visited several of the other Singer plants, to study conditions and make comparative reports. He says his engagement is scheduled to end in the spring or early summer. May it be the right end, Tommy! —Charles W. Hawkes left the New England Telephone & Telegraph Company last fall, to take a position with the American Machine Tool Company at Pawtucket, R.I. Charlie's friends wondered that he made the trip from Dorchester to Pawtucket every day, but the reason became clear after Christmas, when his engagement to Miss Pancha L. Clark, of Dorchester, was announced.—Arthur H. Howland was married to Miss Anna Rossetter Smith, of Chicopee, Mass., on September 25. Howland is supervising architect with the National Concrete Company. His address is 1113 Central Avenue, Indianapolis, Ind.—Miss Mary Newell Healey was married to Francis J. Chesterman on October 2 at Hampton Falls, N.H. They are now at home at 8 Inwood Place, Upper Montclair, N.J.—Edward A. Burkhardt was married on October 15 to Miss Corinne Prescott Wilde, of Quincy, Mass.—Miss Jennie Abigail Kingston, of Malden, was married to Robert W. McLean on November 20. Bob is with the Carver Cotton Gin Company.—William H. Beers and Miss Tallulah Elizabeth Mulliken, of Columbia, S.C., were married on

December 21. This makes about the record quarter for weddings.—E. L. Hill reports the birth of an eight-pound boy on October 9. At the time of writing he was adding 8 to 10 ounces to his avoirdupois weekly, which gave a weight curve highly satisfactory to his "dad." Hill is assistant district engineer at the Worcester works of the American Steel & Wire Company.—The number of junior members of the class of 1905 is increasing rapidly. The secretary moves that at the time of the big reunion, in 1909, when everybody will be back from the ends of the earth, we have a baby-carriage parade. This would give every one a chance to see Miss Constance Whitney, who brought much joy to Mr. and Mrs. H. L. Whitney, of Beverly, on November 21.—Bob Lord has at last broken the silence which has been coming from Gorham, Me. Bob is superintendent of the Ireson Tanning Company of that place, and has been bringing out a new brand of chrome belting, which for water-resisting, non-stretching, tensile, and other properties seems to have everything else skinned to death. —R. N. Turner has entered the political arena, and after an enthusiastic campaign by his friends and neighbors was elected to the Waltham Board of Aldermen by the biggest majority ever given a Republican candidate in his district.—A. J. Manson writes that he and L. C. Winship are with the Westinghouse Electric and Manufacturing Company, in the railway construction department, and are at work on the New York, New Haven & Hartford electric installation in connection with the electric locomotives. He adds that E. M. Lines is in the New York sales office, and C. W. Babcock is in the Boston office of the same company. Manson quotes from a letter from C. E. Atwood, who is in Chile, as follows: "Things are going along swimmingly here. Have put in one electric light plant, and have two more partly done, and another waiting as soon as I have completed these two. Keeps me on the hump all the time, but I'm living on the fat of the land and having the time of my life. You poor devils way back in the States don't know what you are missing." Since getting this letter from Manson, the secretary noticed the following item in the paper: "The engagement is announced of Miss Marion K. Vinal, the daughter of Mr.

and Mrs. Harry A. Vinal, of Dorchester, to Mr. Arthur J. Manson, of New York, Technology, '05."—The secretary received a letter from Seedy Klahr from Louisville, Col., where Westinghouse, Church, Kerr & Co. are building a 6,000 K.W. power house. He says: "It was a matter of $20,000 to the owners to have this equipment ready the 1st of December; but, owing to delays in shipment, some of our material did not reach us until after the middle of November. We worked day and night gangs, and finally had both turbines going Thanksgiving evening, with only two days to spare,—a closer shave than I ever want to have again." Speaking of the country, he says: "The climate is all right, but the people are not planted close enough together to suit me. I am for the crowded cities and race suicide. You know the sun shines three hundred and eighty-nine days a year in Colorado; but, when the 'boosters' brag about their climate, they don't say anything about the wind. When we were erecting the brickwork here, the wind blew so hard that loose bricks were blown off the top of the walls."—George Jones writes, "Aside from the fact that the President was seen recently putting a fresh coat of paint on the White House, there is no news or scandal of any kind from Washington."—L. T. Bushnell writes from Seattle, Wash., where he is doing the "engineering, or near-engineering," for the Mill Owners' Sprinkler Company, and finds plenty to do in spite of the general slackening in business activity.—The secretary hears from Bill Spalding now and then, and recently suggested to him that, if he wasn't careful, he would forget and write something that could be used in the REVIEW, whereat Bill replied, "How is this?—

SOCIAL ITEMS FROM BINGVILLE

Mr. Cowper is reported to be the town fusser of Lewiston, Pa.

The selectmen of Bingville are to hold a special meeting to see what can be done to stop the alarming and dangerous spread of the barn dance in our city.

Mr. J. T. Glidden has recently sailed for the Cerro de Pasco Mining Company of Peru, S.A. New York life, where nobody drinks but father, is too slow for John, and his thirst has driven him to the home of Peruna.

Mr. William Gouinlock has become a model citizen of Warsaw, N.Y., and is setting a bright and shining example to the youth of that city. He and Cowper have agreed on a $50 fine for smoking within one year, and the Tobacco Trust is staring ruin in the face.

C. A. Houck, as a side issue, has become a travelling exhibitor of Sambo, the famous clog-dancing doll, which entertains the young and old alike. He may be booked for an evening's performance at a reasonable rate, and is sure to make a hit.

Rumor hath it that Spalding is drawing a salary of $5,000. We feel called upon to nip this in the bud, lest our creditors hear of it; but we cherish the wish that the Big Noise would begin the New Year by making the necessary change in the decimal point."

Very good, Bill. Let's hear from the other rural districts.

1906.

THOMAS L. HINCKLEY, *Sec.*, 745 Osceola Avenue, St. Paul, Minn.
ANGELO T. HEYWOOD, *Res. Sec.*, Mass. Inst. of Tech., Boston.

The class has long been waiting for the reports of the reunion and the ballots, and many inquiries have come in regarding them. The resident secretary, who has charge of this, feels that it is necessary to make some explanation for this delay. He writes as follows:—

Anticipating a very busy summer and autumn in personal matters, I had made plans to have the class material printed and all mailed during the summer, but while I was away from Boston, working in the mining district of Cobalt, Ont., during July, August, and September, the material was in some manner side-tracked, and, much to my regret, was not printed. When I returned from Canada, I was immediately engaged in removing from Boston to Wakefield, and thereafter in work in the Mining Department of the Institute. Lame as it may seem, I must confess that I feel that I have been very busy, but this, of course, is no excuse, when it comes to "doing things." Daily travelling back and forth on the railroad has effectively and fatally consumed the time usually available for secretarial work, and it is only during the recent Christmas vacation that I have been

able to get my part of the class files and material into order to work with. This is now done, and I have some hopes this month of raising my embargo on the class mailing department and of helping to put the constitution in operation as rapidly as possible.

It is expected that arrangements will soon be under way for the midwinter class dinner to be held in the early part of February. The call for this dinner will be sent with blanks for information, present addresses and dues, and will probably reach the members before this number of the REVIEW is received

The secretaries take pleasure in recording the following happy events:—

"Mrs. Alma Johonnot announces the marriage of her daughter Christina Vaughn to Mr. Ralph Reginald Patch on Wednesday, September the fourth, nineteen hundred and seven, Stoneham, Massachusetts."

"Mr. and Mrs. Frank Weston Chandler request the honor of your presence at the marriage of their daughter Charlotte Estelle to Mr. Arthur Edward Wells, on the evening of Thursday, the fifteenth of August, one thousand nine hundred and seven, at seven o'clock, 52 Harpswell Street, Brunswick, Maine."

"Mr. Albert Taft Aldrich announces the marriage of his daughter Sadie May to Mr. Andrew Bartlett Sherman, Jr., on Tuesday, December thirty-first, nineteen hundred and seven, Fitchburg, Massachusetts." (By wireless.) It is reported that Sherman has accepted a position of teaching in Virginia.

Mr. Herbert J. Ball (II.) was married on July 30 at Allston, Mass., to Miss Fannie J. Babcock, of Bay Roberts, Newfoundland. Mr. and Mrs. Ball made a wedding trip to Bay Roberts, and are now at home and keeping house at 15 Woodward Avenue, Lowell, Mass.

Again, by wireless, we have that Russell Peter Raynolds (III.) is to be married. "Pete" is in Colorado, and we hope he will transmit details of the glad news.

Charles Allen Merriam (II.) was married Oct. 2, 1907. He is with the Simplex Electric Company, Cambridge, Mass.

Clarence E. Lasher was married on Nov. 5, 1907, to Miss Sarah Maud Henderson at St. John's Church, North Adams, Mass.

During the past summer Sylvanus W. Wilder came home on a visit to Boston from Paterson, N.J.—We observe that H. S. Philbrick is now a professor in the University of Missouri, Columbia, Mo.—Cliff Wilfley (III.) writes of an interesting journey to Mexico.—Hunter Light is reported doing well in Pennsylvania.—Several of the fellows dropped in at Christmas time to see old Tech, and the following "spoke" the resident secretary: C. A. Farwell, Marden W. Hayward, W. A. Sheldon, James H. Polhemus, George M. Henderson, George F. Hobson, Richard V. McKay.—In October James R. O'Hara, Jr., dropped in on his way to Tennessee.—Anna M. Cederholm is teaching in Wellesley College.—Harold C. Elliott (I.) is engaged near Boston in experimental work on a portable acetylene gas generator and storage tank.—It is reported that Roland P. Davis (I.) won a valuable scholarship in civil engineering research at Cornell University, Ithaca, where he is now engaged.—We have a new address for "Tommy" Holmes.—W. A. Sheldon has returned from Houghton, Me.—Mildred E. Blodgett is teaching in the St. John Baptist School, New York City.

1907.

ALEXANDER MACOMBER, *Sec.*, 83 Newbury Street, Boston, Mass.

I. *On the Part of the Secretary*

It is gratifying to note that a good percentage of the class is responding loyally to the secretary's call, about 60 per cent. of the graduating class having answered the circular letter, besides a number of men connected with '07 in earlier years. Since only about a dozen letters have been returned unclaimed, it is hoped that in time we shall hear from the others. Now that the fellows have become more or less settled, all are urged to look up any classmates in their vicinity and form local organizations, getting together once in a while to renew old times and keep up the loyalty to our college. The secretary will be glad to communicate with

any one desirous of carrying this out, and will furnish addresses of those who are so situated that they can join in. Men of other courses may be interested to follow the example of Course VI. in starting a circular letter, each man adding his contribution and sending it along. The next event of general interest will be the first class reunion at Commencement. Plans are already under way to make this a great occasion, and every man had better begin to save up his railroad fare to Boston. Full details will be sent out later, and will also appear in the April REVIEW. The following letter was received from the Technology Club of New York:—

THE TECHNOLOGY CLUB OF NEW YORK,
36 East 28th Street.

Secretary Class of 1907:

Dear Sir,—Will you kindly send me a list of the '07 men in or near New York City? We gave a smoker to '07 last month, but had few responses. We are to give a series of smokers and addresses by scientific men this winter, beginning October 26, and want '07 men to enjoy them with us.

Sincerely,

WILLIAM H. KING, *Secretary.*

This request was complied with, and every man who is passing through New York is urged to visit the club, where, as your secretary can personally vouch, he is assured of a hearty welcome.

II. *Personal Notes*

Under this heading appear such notes, changes of address, and new addresses as have been received since the last REVIEW. It will be necessary to refer to previous REVIEWS for such addresses as have already been printed and have not been changed. At the beginning of each year a complete list of the class will be published as far as the records permit.—F. O. Adams, Jr., is with Newhall & Blevins, architects, 9 Park Street, Boston.—F. W. Amadon's address is 63 Union Avenue, South Framingham, Mass. —E. W. Bonta has been ill since graduation and is undergoing treatment at a New York sanatorium. His home address is "The Snowdon," James Street, Syracuse, N.Y.—L. W. Brock's address

is 496 Cambridge Street, Allston. Lester is another to become inoculated with the class germ, as an extract from his letter in the next section shows.—George Bryant is now on the dramatic staff of the Boston *Transcript*. Address, 103 President Road, Braintree, Mass. George is another one of these Benedicks.—K. G. Chipman is back at Tech this fall. His address is 97 Hillside Avenue, West Newton, Mass.—W. B. Coffin is with R. C. Sturgis, architect, 120 Boylston Street, Boston.—John A. Davis is with the United States Geological Survey, Washington, D.C.—Carrol Deane's address is 392½ Washington Avenue, Scranton, Pa. Carrol has evidently changed his mind in regard to the Westinghouse apprentice course, as Tresnon, '07, reports he is not there.—H. S. Duncan is at Globe, Ariz., with the Old Dominion Copper Mining & Smelting Company.—M. H. Eisenhart is with the Eastman Kodak Company, his address being 2 Magee Avenue, Rochester, N.Y.—Charles Everett is studying in France. Address, 5 Rue Palatine, Paris.—Otis G. Fales is with the Gregg Company, Limited, of Newburg, N.Y.; address, 44 Carson Avenue, Newburg, N.Y.—John Frank has not been heard from. Is he still looking for that job? John's home address is 310 North Pearl Street, Natchez, Miss.—J. M. Gaylord is in the office of the Chief Engineer United States Reclamation Service. His address is 146 Terrace Drive, Pasadena, Cal.—L. F. Hallet comes back to Tech this fall.—E. W. Hamill expects to be located in St. Louis. His present address is Belleville, Ill.—F. E. Hamilton (ex '07) is with the Allis Chalmers Company. Address, 471 Marshall Street, Milwaukee, Wis.—L. C. Hampton's address is 10 St. James Avenue, Boston.—J. W. G. Hanford is with Herbert Smith, M.E., Jameson Building, Spokane, Wash.—Warren Hastings is with the New Jersey Zinc Company, Franklin Furnace, N.J.—A. W. Hull is with the Newport News Shipbuilding and Dry Dock Company. Address, 125 33d Street, Newport News, Va.—J. F. Johnston, Jr., has changed his address to 3075 California Street, San Francisco, Cal.—G. R. Jones is with the Washington Filtration Plant, Washington, D.C.—Warren Keeler is with the Carpenter Steel Company. His address is 406 Green Terrace, Reading, Pa.—John Kimball is with the Penn-

sylvania Railroad, Room 1113, Union Station, Pittsburg, Pa.—W. F. Kimball is with the Malden Electric Company, 101 Linden Street, Malden, Mass.—R. F. Knight, is with the Henry Souther Engineering Company, 440 Capital Avenue, Hartford, Conn.—A. T. Kolatschevsky is back at Tech.—E. F. Lewis is with Allen & Collins, architects, 6 Beacon Street, Boston.—M. E. MacGregor's address is 189 Fairmont Avenue, Hyde Park. Mac is not settled yet, having just returned from a Western trip.—Macomber, who after graduation was in the Boston office of Stone & Webster, is now on a business trip in California. His address as class secretary still remains 83 Newbury Street, Boston.—N. A. Middleton is with the American Locomotive Works, Richmond, Va. Address, "The Winona," Baltimore, Md.—Addison Miller is doing graduate work in electricity at Cornell. Address, 803 Lincoln Avenue, St. Paul, Minn.—W. D. Milne is back at Tech this fall. Address, 224 Newbury Street, Boston.—J. G. Moore is with the American Bridge Company. His address is Savona, Del.—J. E. Moore is with P. N. Nunn, engineer, of Provo, Ida. His present address is Alexander, Ida.—Pastoriza is working for the same concern with Moore.—E. P. Noyes (ex '07) is with the Turner Construction Company of 11 Broadway, N.Y. His present address is Springfield, Mass., care of that concern.—G. W. Otis (ex '07) is with the American Blue Stone Company of Warsaw, N.Y.—E. H. Reed, Jr., is unsettled at present, his home address being 4758 Lake Avenue, Chicago.—Don Robbins has left Horton & Heminway of Boston, and is with W. H. McElwain & Co., shoe manufacturers, Box 322, Epping, N.H.—W. D. Robinson is with the Newport News Shipbuilding & Dry Dock Company. Address, Box 23, Newport News, Va.—T. W. Roby, Jr., is with the McClintie-Marshall Construction Company. Address, 408 Whitney Avenue, Wilkesbarre, Pa.—V. S. Rood is with the Daly West Mining Company, Park City, Utah.—L. P. Russell is with the Central Colorado Power Company. Address, 5th and Lester Streets, Leadville, Col.—Tracy Smith is in the testing department of the General Electric Company. Address, 618 Chapel Street, Schenectady, N.Y.—A. F. Stevenson is assistant at the M. I. T. Sewage Experiment Station.—C. F. Story

is with the water department of the city of Springfield, Mass. Address, 43 Bridge Street, Springfield.—John Tetlow (ex '07) is with the Builders' Iron Foundry, Providence, R.I. Address, 111 Friend Street, Adams, Mass.—C. J. Trauerman (ex '07) is with the Enterprise Mining Company, Cooney, N.M.—J. E. Tresnon is taking the apprentice course with the Westinghouse Company. Address, 427 Hawkins Avenue, Braddock, Pa.—E. E. Turkington is with J. G. White & Co., 43 Exchange Place, New York City.—Lawrence Wetmore is at Foxboro, Mass., with the Shaeffer & Budenberg Manufacturing Company.—A. E. Wiggin is with the Boston & Montana Consolidated Copper & Silver Mining Company at Great Falls, Mont.—E. S. Wires is with James Purdon, architect, 8 Beacon Street, Boston.—The secretary would like the addresses of the following: Eugene Phelps (IV.), H. J. C. MacDonald (III.), B. C. Gupta (VI.).

III. *Letters*

Nate Middleton writes:—

"I went abroad this last summer and luxuriated in Paris and London before starting to work in this beastly hole (American Locomotive Company at Richmond, Va.). The powers that be have decreed a year in the shops, so in the shops am I. Immediately on landing in New York I went to Schenectady to report, and from there was sent here.

—From H. G. Pastoriza:—

Ernest Moore and I are in the employ of Mr. P. N. Nunn, who is building a 40,000 H.P. hydro-electric plant here in the wilds of Idaho. We are in the midst of a country of sand and sage brush and Mormons, where they raise wheat and alfalfa and ask a blessing at the beginning of a dance. Besides Ernest and myself, J. C. Damon, '05, is here. Several weeks ago we three Tech men climbed a snowy peak across the river, and at the summit, about 10,000 feet above the sea, we built a big stone T, about fifteen feet high, to commemorate our visit and perhaps persuade some of the rising generation of Idaho to come to Tech.

—The following was clipped from the Boston *Transcript*:—

"The new courses in mechanical drawing, descriptive geometry, and surveying at Bowdoin have proved very popular. The courses were established so that men who are going to follow up the sciences may have the advantages of four years of liberal arts as a foundation for higher technical training. These courses also enable men to complete their studies in any of the leading technical schools of the country in two years. The instructor, Henry B. Hastings, is a graduate of Phillips Exeter Academy and of the Massachusetts Institute of Technology, and received the degree of civil engineer last June."

—R. F. Knight writes:—

I have been down here at Hartford, Conn., since June, and have charge of the testing laboratory of the Mechanical Branch of the Association of Licensed Automobile Manufacturers. We are fitted up to make tests on automobile motors, carburetters, and other appliances.

—George Bryant writes:—

Put me down as married—and glad of it—to a girl who thinks Tech is the only place worth while. I advise all who can to enter the field of matrimony.

The electrical engineers will particularly enjoy the following note from Lester Brock:—

Yes, the 1907 bug caught me the fifteenth day of June, and I came into the magnetic field surrounding a certain Bertha Helen Muzzey, of Tilton, N.H. Our polarities happened to be just right, our frequencies soon got into step and we synchronized. We expect to throw in the external circuit in about three years, unless we get to "hunting" and "go out." I tell you, Mac, we came in without so much as a grunt: the belt didn't even jump. When we get the power on, you must come and see us.

The fellows are urged to keep up the good work of writing to the secretary, for extracts from these letters make the notes much more interesting. So do your share, and let us hear from each man. Only don't be offended if the secretary does not answer your letter immediately, for his correspondence is growing to such an alarming extent that he already has a good case of "writer's cramp."

NECROLOGY

EDWARD A. HANDY, '75

From the *Cleveland Plain Dealer*, Nov. 22, 1907:—

Edward A. Handy, general manager of the Lake Shore & Michigan Southern and allied railroads, died yesterday at 1.30 P.M. at Chicago. His death was a shock even to those about him, for his illness dated back but a few days. Pneumonia is assigned as the cause of his death.

The active career of General Manager Handy was unique in the railroad history of the United States. Entering the railroad service as a civil engineer, following that profession on various great lines throughout the country and into Mexico, he remained essentially an engineer through all the grades of promotion until he became general manager of the Lake Shore & Michigan Southern and its lines. Then for the first time he became identified with the operating department of railroad service.

Mr. Handy was born April 4, 1855, at Barnstable, Mass. He was graduated from the Massachusetts Institute of Technology in 1875 as a civil engineer. As assistant engineer of construction, he entered the service of the Atchison, Topeka & Santa Fé Railroad in May, 1878. The following year he was appointed assistant engineer of bridges and buildings for the same road, continuing in this position until May, 1880. In July of that year he was employed by the Mexican National Railroad as locating engineer, holding the position until January, 1881, when he became principal assistant engineer of the northern division of the Mexican National. From March, 1883, to September, 1888, he was chief engineer of the same road.

While Joseph O. Osgood was chief engineer of the Lake Shore, with headquarters in Cleveland, he learned of the brilliant young engineer in the South-west, and determined to bring him to this city. In March, 1888, Handy entered the service of the Lake Shore. He was first appointed civil engineer of the Lake Shore Eastern Division, as it was then known, being that portion of the system extending from Buffalo to Toledo. Mr. Osgood afterward went to the New Jersey Central, where he has since remained. Mr. Handy was then named chief engineer of the Lake Shore & Michigan Southern in July, 1891. His duties as chief engineer of the big system were considerably added to in February, 1900, when he was also

named chief engineer of the Lake Erie & Western, which line had been acquired by the Lake Shore.

The office of assistant manager of these lines had been in abeyance for several years, but July 15, 1905, the office was revived, and Mr. Handy received the appointment. His jurisdiction extended over the Lake Shore & Michigan Southern and Lake Erie & Western, as well as over the Indiana, Illinois & Iowa and the Lake Erie, Alliance & Wheeling, which had also been acquired by the Lake Shore. When General Manager W. H. Marshall was elected president of the American Locomotive Works, Mr. Handy was chosen to succeed him, his appointment dating Feb. 15, 1906, including all the lines mentioned.

Mr. Handy married a sister of his former chief, J. O. Osgood, and two sons were born to them, Jack, sixteen years, and Ned, fourteen years, both now attending school near Boston. The Handy residence is at 1909 East 93d Street.

More to Mr. Handy than any other man is due the preparation of the magnificent plans for the $3,000,000 union depot proposed for Cleveland, so his business associates declare; and also the immense work of preparation and planning for new track construction, including the four-tracking of the Lake Shore from Buffalo to Chicago; the building of a new line into and through the mountains of Western Pennsylvania, and at least two gigantic railroad plans not yet completed in the immediate locality of Cleveland, which would do much to solve intricate transportation problems in this railroad centre.

Mr. Handy never lost sight of the merely local problems involved in building construction. He was general manager of the Lake Shore in fact as well as name. Yet he was not autocratic nor dictatorial. Rather he was companionable to his business and social associates and kind and personally interested in the welfare of his subordinates.

MINUTE OF RESOLUTION BY THE EXECUTIVE COMMITTEE OF THE TECHNOLOGY CLUB OF NORTHERN OHIO

Resolved, That we mourn the loss of Edward A. Handy with a deep sorrow, personal to every one of us and to the whole community.

He was a man of exceptional ability and attainments, of high character and tireless industry, always cheerful, tactful, and kindly, and with a vein of genial humor that made him one of the most companionable of men.

He was one of the foremost citizens of Ohio, a leader among the civil engineers of America, and his career has been an example and an inspiration to the younger graduates of the Massachusetts Institute of Technology.

Resolved, That on behalf of the thousands of Technology graduates who knew "Ned" Handy and loved him, we extend our deepest sympathy to Mrs. Handy and their sons in this hour of bereavement.

Signed, F. B. Richards.
A. W. Johnson.
Frederick Metcalf.
Sidney Y. Ball.

BOOK REVIEWS

A COURSE IN MATHEMATICS

The attention of all interested in the teaching of mathematics in engineering schools is particularly drawn to the first volume of "A Course in Mathematics," by Professor F. S. Woods and Professor F. H. Bailey, of the Department of Mathematics in the Massachusetts Institute of Technology. This volume is the most important American outcome of the deep impression recently made by the advocates of a reform in the methods of teaching mathematics. Such instruction may be viewed from two distinct standpoints. If the purpose of the instruction is to introduce the student to mathematics as a branch of pure science, in which he may later carry on research work, the best method may possibly be different from those adapted to acquainting a prospective engineer with one of the most useful helps science has to offer him. It is generally held to-day that without any sacrifice of accuracy the methods of instruction best adapted for the mathematical classes in a technical school are those which carry forward at the same time various branches. In the old methods of instruction it was customary to finish algebra before taking up analytic geometry, to finish analytic geometry before taking up the calculus, and to finish the calculus before beginning mechanics. As a result of this, it was only students with good mathematical memories who were able to appreciate as fully as desirable the relations between the various branches. Such a plan is entirely abandoned in this new course, which, it should be stated, was prepared at the invitation of Professor H. W. Tyler, head of the Mathematical Department of the Massachusetts Institute of Technology, and has received the benefit of his criticism. In the first volume, which alone has appeared as yet, there is an introductory chapter on methods of elimination, including the use of determinants. The student next takes up the methods of plotting

functions, and is thus introduced early in his course to this valuable practical method of understanding an equation. The study of the algebraic polynomial, including the analytic geometry of the straight line, the more important theorems of the theory of equations, and the definition of a derivative, comes next. This enables the student to obtain early an introduction to the principles of the calculus, which is particularly desirable. The study of the algebraic function in general is next taken up, and, in doing so, the student's knowledge of analytic geometry and calculus is enlarged by new applications of the principles previously stated. Simple integrations are also introduced at this time. Curves are taken up, and the student is introduced to this interesting portion of analytic geometry without being confused by the idea that it relates solely to conic sections. After this the study of elementary transcendental functions is begun, and finally the year's course closes with a study of the parametric representation of curves, polar co-ordinates and curvature. It will be noticed that no work in three dimensions is taken up in this course, that being deferred to the second year. It has already been stated that the book is primarily for the use of engineering students. It may be questioned, however, whether the student who takes up mathematics as a branch of a liberal education will not find this method of approaching the subject more satisfactory than the traditional one of attacking one branch at a time. The relations between the several branches taught in undergraduate courses is so intimate that it is safe to say only a student of exceptional natural mathematical ability can acquire so good a knowledge by pursuing one branch after another as by taking them up in the way outlined by Professors Woods and Bailey. It should also be stated, for the benefit of engineers who wish to review their mathematical studies, that this volume will be found an excellent help for the purpose. It is clearly written, well printed and illustrated, and contains a large number of examples which will be particularly helpful; for it is a well-known fact that a thorough comprehension of a mathematical method is only possible after it has been applied in the solution of a well-selected set of problems.—*The Engineering Record, Nov.* 16, 1907.

The Technology Review

Vol. X. APRIL, 1908 No. 2

CHARLES HENRY DALTON

Charles Henry Dalton, who was the first Treasurer of the Massachusetts Institute of Technology, died at his residence in Boston, Feb. 23, 1908. Mr. Dalton was born at Chelmsford in this State on Sept. 25, 1826, the son of Dr. John Call Dalton, an eminent physician of that period. When the city of Lowell was founded, Dr. Dalton removed with his family to the new city, where Mr. Dalton's youth was spent. His father later removed to Boston, where he lived until the close of his life.

Charles Dalton entered upon his business career as a clerk with the commission house of Sayles, Merriam & Brewer, then the selling agents for some of the largest factories of New England. It will show that he soon made apparent the remarkable capacity for organization and administration which became so marked in his later business career to state that in one of his earlier years he was sent by the firm to Southbridge where a complicated condition of affairs had arisen, resulting in a strike of the operatives of the Hamilton Woolen Company there located, and which promised serious results. In a short time everything was arranged, and so satisfactorily that young Dalton was put in charge, and he resided at Southbridge for five years.

Soon after his return to Boston he entered the firm of

J. C. Howe & Co., engaged in a similar business, and was sent to Manchester, N.H., to be in charge of some department of the Manchester Print Works, one of the largest manufacturing establishments in Manchester. A residence there of about five years brought him to Boston not long before the commencement of the Civil War, about which time he was married to Miss Mary McGregor, and established his home in Boston where he resided for the remainder of his life, with a summer residence at Beverly Farms.

Perhaps the most notable of all the public services which it was the good fortune of Mr. Dalton to render was as a member of the official staff of Governor Andrew during the first years of the Civil War. His special duty was to act as the personal representative of the Governor at Washington, in confidential relations with President Lincoln and the War Department in regard to the recruiting, equipping, arming, and hurrying forward of the Massachusetts regiments. So much occupied was he that he was forced to live in Washington for a considerable period.

Next in importance Mr. Dalton would probably consider his service to the Massachusetts General Hospital and McLean Hospital. Here for more than a quarter-century he acted first as a trustee and later as president, always giving intelligent and loyal service. He was a member of the committee for negotiating the sale of the old site at Somerville and of the building committee for the new buildings at Waverley. As president, he delivered an interesting address at the celebration of the fiftieth anniversary of the first application of ether at the Hospital in September, 1846.

He was elected a director of the New England Trust Company in 1875, was made a vice-president in 1880 and remained so until the time of his death. He was for many

years a director of the Massachusetts Hospital Life Insurance Company, and a trustee of the Provident Institution for Savings; also, at various periods, treasurer of the Merrimack Manufacturing Company, of the Great Falls Manufacturing Company, and of the Consolidation Coal Company of Maryland.

He was for nine years a member and for eight years chairman of the Boston Park Commission, and the admirable park system of Boston was laid out and largely built under his supervision. For twelve years he was a member and during a portion of that time chairman of the Boston Transit Commission, having charge of the location and building of our subway system.

Omitting mention of various other similar positions of more or less public consequence, it remains to speak of his connection with the Institute of Technology. Of this he was one of the charter members, active in promoting the organization, and was elected Treasurer May 6, 1862. He resigned the treasurership after four years of service, but remained a member of the Corporation until Feb. 12, 1879. He was again elected a member March 13, 1895, but declined to serve. He was a contributor to various subscriptions, and April 8, 1896, he established the "Dalton Graduate Scholarship," "for the payment of fees of American male students, graduates of the Institute, who may wish to pursue advanced chemical study and research, especially applicable to textile industries," showing that he maintained a lively interest in Technology long after his official connection with it had terminated.

In all these varied activities it goes without saying that he performed his part well, or he would not have been chosen to them. He was remarkably clear-headed, of excellent judgment, and a well-balanced mind, so that, when called

to the decision of large questions, his verdict was sure to be justified by subsequent results.

He was never a seeker for office, but, when called upon for service, he was ready to respond to the best of his ability and is entitled to be named among the ideal citizens of the Commonwealth.

Happy in his life, he was happy in the circumstances of his death. On the evening of February 22 he retired in his usual degree of health. On the morning of February 23 he was no longer with us, for God had taken him.

WILLIAM ENDICOTT.

THE NEW "TECH UNION"

There is now every prospect that a new and more commodious dining-room and social hall for the use of students will soon be established on the grounds of the Massachusetts Institute of Technology.

The movement for the inauguration of this new Union is entirely of student origin, and is one of the best indications that the Technology student is now fully alive to his needs and opportunities in the direction of a more general social life.

The original Tech Union was inaugurated by President Pritchett in 1903, and the entire work of its installation was undertaken and carried through by two or three persons not connected with the student body. It has been kept in existence and managed principally by officers of the Institute, with some assistance from the students. The cramped nature of the accommodations furnished and the awkwardness of the location have hindered its proper development; but, in spite of these drawbacks, it has accomplished much. It has enabled the different classes and societies of Technology to gather for social meetings in a very inexpensive way. It has also made possible a comfortable lounging and luncheon room for some hundred students at the noon recess. But, principally, its use has convinced the undergraduate that such a hall is a necessity, and he now asks for a wider extension of this idea.

The Grundmann Studio Building, centrally located in the midst of the Engineering Buildings, appeals to the students as an ideal location for a social hall and dining-room, and several months ago an energetic editor of *The*

Tech discovered that the lease of this building from the Institute authorities expired in September, 1908. After investigation he brought the subject to the attention of the Institute Committee, a representative body of students elected from all classes, whose duty it is to act for the students in all matters of general interest. The joint action of *The Tech* and the Institute Committee resulted in the publication of a carefully written article in *The Tech* of Dec. 30, 1907. In this article it was pointed out that here in our very midst existed an ideal opportunity for developing at once a Tech Union that should more satisfactorily meet the present needs of Institute students. Copies of *The Tech*, containing a cut of the Grundmann Studio and a plan of the rooms, were distributed free to all members of the Corporation. Mass meetings of the students were held. The plan was indorsed by each class separately and by all the large student organizations. These different bodies adopted resolutions, which, with the original plan of the Institute Committee, were formally presented to the President and Executive Committee on Jan. 28, 1908. At the request of the latter committee the Treasurer of the Institute entered cordially into the spirit of the plan, and at once took up with the Copley Society, the present lessee of the Grundmann Studio Building, the question of the relinquishment of a large portion of that building.

Other plans for a location of the Union in the immediate neighborhood of the Institute are also under consideration, and which of these will be finally adopted has not yet been fully determined. It is, however, certain that the new Union will be provided for, and that this will be done in the best way practicable.

The Union is to be not merely a lunch-room, but a true students' club. Besides a large hall, which will be used for

the serving of meals and for the general evening meetings, there will be a lounging and smoking room, a reading-room, a coat-room and mail delivery, and two smaller dining-rooms for the use of clubs. There will also be rooms which can be used by some of the student organizations.

The idea of the establishment of a new Union has met with encouragement from the officers of the Institute and the Faculty whenever they have been consulted, but the students alone are responsible for the initiative in connection with the new movement.

To show how greatly this movement for the new Union has interested the students, it is only necessary to state that fifteen or more of them have undertaken a thorough investigation of the dining system in nineteen different colleges, and have submitted to the President and Executive Committee detailed reports of the systems in operation at these various colleges. These investigations have been made mainly with the idea of finding out what is the best and most economical plan for running a dining-room.

After a canvass of the students it seems likely that under the conditions now existing at the Institute there will be some six or seven hundred men who will want to take their luncheons at the new Union. It is also probable that about one hundred and fifty men would take their breakfasts at the same place, while from two hundred and fifty to three hundred would get their dinners there. This rate of attendance, of course, depends upon the meals being of better quality and lower price than can now be obtained at restaurants in the vicinity of the Institute buildings.

The following suggestions from the report submitted by the students may be of interest. The plan adopted at Dartmouth seems to have appealed especially to them, and they have based their suggestions principally on that.

At Dartmouth the dining-room is under the direction of a Dining Association composed of two Faculty members and one Senior. There is a financial manager, a graduate, who receives as yearly salary a percentage of the profits. A professional steward is employed by the directors, and receives a yearly salary. The waiters, who are hired by the manager, and are paid at the rate of seventeen and one-half cents an hour, are students; the head waiter is also a student, and receives a weekly salary, The meals served at Dartmouth are a combination of *table d'hôte* and *à la carte*, and are at the following prices: breakfasts, fifteen cents; lunches, fifteen and twenty cents; and dinners, twenty and twenty-five cents. There is also a special order list, for which the prices charged are about ten per cent. less than those charged at restaurants. Coupons are used for payments of meals, and are purchased in books of five hundred, each coupon representing one cent.

In accordance with suggestions made by the students it is expected that there will be a student board which will have general control of the Union subject to the approval in financial matters of a small House Committee of officers of the Institute. A professional steward will be employed who will take charge of the buying, the planning of the menu, and the kitchen and serving-room, and who will be directly responsible to the Institute authorities. It is intended to employ student waiters, who will be paid a per hour wage. This employment of student waiters has been tried at the present Tech Union with success, and the plan works well also at many large colleges, noticeably, in our own vicinity, at Dartmouth. The idea is a good one in that it tends to build up and increase a truly democratic spirit among the young men thus associated.

Aside from the importance of this development of the

student life of the Institute, the necessary enlargement of the Mechanical Engineering Laboratories for the installation of the new turbine and other apparatus makes it imperative to abandon the present lunch-room in the Pierce Building, which has been so ably and successfully managed for many years by Mrs. King. It is the determination of those interested in the new Union to see that the same type of luncheon and the same quality of food shall be served as have been served in the past, although there will probably be in addition regular meals at fixed prices.

It is hoped that the expense involved in the equipment of the new Union will be met largely by gifts, several of which have already been promised by friends of the Institute.

In conclusion, it seems to one who is interested in Technology student life that this movement for a new social and dining hall is indicative of the growth in the undergraduates of those qualities of initiative, sociability and responsibility, for the development of which the alumni have considered that inadequate preparation has hitherto been made. A new Union that shall temporarily fill the place which the Walker Memorial Building is ultimately to occupy will tend to foster this Technology spirit and to open a road to broader social relations among the students.

ALFRED E. BURTON.

THE COMMONWEALTH AND THE INSTITUTE

In Volume V. of the REVIEW (April, 1903) is an illuminating article by Myron E. Pierce, Esq., on "The Institute and the Commonwealth," in which he proves that "the debt which the Commonwealth owes the Institute is not a small one." In the five intervening years that debt has greatly increased, and it will doubtless never cease to grow. On the other hand, the Institute is under distinct obligations to Massachusetts, not only for its charter and for substantial money aid, but also for very real though intangible strength and support through the historic, educational, and industrial prestige of this famous commonwealth. Furthermore, as a public service corporation in the highest meaning of that term, the Institute has definite duties towards education, industrial development, and citizenship in general, which increase as society progresses and which grow more pressing as the institution advances in reputation and ability to serve.

In its act of incorporation the Massachusetts Institute of Technology is made a body corporate "for the purpose of instituting and maintaining a society of arts, a museum of arts, and a school of industrial science, and of *aiding generally, by suitable means, the advancement, development, and practical application of science in connection with arts, agriculture, manufactures, and commerce.*" Moreover, under acts of the Massachusetts legislatures of 1863 and 1890, the Institute receives one-third of the United States Land Grant of 1862 to the end that it may "teach such branches of learning as are related to the agricultural and mechanical arts, . . . *in order to promote the*

liberal and practical education of the industrial classes in the several pursuits and professions of life."

Although these are larger duties than the institution has yet been able to fulfil, the most captious critic cannot accuse it of any neglect of opportunity or breach of faith. The development of the School of Industrial Science has been so rapid and so far beyond what its founders foresaw that practically all the energy and resources of the Institute have been concentrated, necessarily and properly, upon that single feature of its work. Even thus limited, it has fulfilled its duty to the men who founded it and to the state in far ampler measure than was anticipated, and has made contributions to industry, citizenship, and education which are incalculable. In its forty-three years of existence it has sent into active life not only 3,887 graduates, but also an even greater number of men who, for one reason and another, did not take a degree. Could the contributions of these eight or nine thousand individuals, through their training, through their inventions, and through their labors in industry and administration, as well as through their example, to the welfare of the country and of the world be measured in money, the return would represent many times the total sum paid over to the Institute by the nation, the state, private benefactors, and the students themselves. Moreover, in developing new methods of teaching and in encouraging a spirit of earnestness and devotion to work, the Institute has had upon citizenship and upon the progress of higher and secondary education an effect far-reaching and of tremendous good.

Because of its very success in the one direction towards which it has so largely turned its energies, the Institute is bound to question itself from time to time concerning the scope of its present work and the possibility of still broader

undertakings. It is peculiarly appropriate for Technology to ask such questions at this time, since the very avenues of education which it has not yet had time to explore are those towards which the United States in general and the Commonwealth of Massachusetts in particular are looking for a solution of many urgent problems of economics and of industry.

Having entered, since the opening of the present century, into world-politics and world-commerce, the United States finds itself confronted with the fact that, while it is the largest producer of food-stuffs, ores, and kindred natural resources, it holds, in view of the size of its population, only a small place in the international field of manufactures. For the agricultural and mining states this is not serious; but to communities like Massachusetts, having substantially no mines, no forests, and no vast grain-raising acres, the problem is vital. Moreover, under stress of competition, profits have been so diminished that, with those manufactures in which the proportionate cost of raw material is large, the desire to avoid transportation charges has led many industries away from Massachusetts and towards the sources of supply. The obvious way to make good such losses is to develop those finer industries in which the cost of material as compared with the value of the finished product is insignificant. Here, however, states like Massachusetts find themselves confronted with another difficulty, that of a scarcity of skilled workmen, foremen, and superintendents, able to develop those higher manufactures and to make them profitable.

Confronted with these conditions, the Massachusetts General Court has created, on the one hand, a Commission on Commerce and Industry to study the economic problems of the Commonwealth and, on the other

hand, a Commission on Industrial Education to devise the best means of educating youth for skilled workmanship and for supervision of the highest forms of manufacturing. In the problems which these commissions are studying is involved the whole educational policy of the state; and the appointment of such bodies is but one of many signs that the commonwealth and the nation are aroused to the fact that "the liberal and practical education of the industrial classes in the several pursuits and professions of life" must indeed be diligently and effectively promoted if the United States is to meet the urgent demands of modern civilization.

Therefore, it would seem not only proper, but imperative, for the Institute, under the terms of its grants and charter, to make ready as soon as possible to enlarge its scope and to take its due part in the development, through education and research, of national industry and commerce. There need be little difficulty in determining in what way this service can be rendered; for in the great state universities of the Middle West are to be found notable examples of how an institution of higher education may make itself of transcendent value to its own community, and hence to that wider community, the nation. Those institutions, like the Institute, are Land Grant colleges, but, unlike the Institute, derive their revenues almost exclusively from the state. In return for this support—and, indeed, as a condition upon which liberal revenues depend—most of those universities not only are training their students for such service as the graduates of the Institute so notably render, but also are making the present and future problems of the farmer, the manufacturer, and the railroad man their own by seeking out existing difficulties, by propounding new questions in applied science, and by solving these problems (so far as

they can be solved) in the field, in their class-rooms, in their laboratories, and in the special experiment stations for which most of the states have made generous provision. The increase in the agricultural, mineral, and industrial resources of those communities due directly to the labors of the state universities would be incredible, were it not verified by the extraordinary development of the middle-western states within the last fifteen years. Massachusetts, in that period, has made progress, too; but, as compared with the almost miraculous growth of the Middle West, she has fallen behind, and there seems every reason to believe that she can be brought to the front again only by some such methods of educational co-operation as have been pursued in those newer and less conservative communities.

Massachusetts is not likely to establish a state university for the kind of service which the Universities of Wisconsin, Michigan, Illinois, etc., are so ably performing. To do so would be contrary to her educational traditions, and, in view of the fact that she already possesses about a dozen higher institutions of established rank, would be quite superfluous. But, because she has no state institution to which she may of right turn for educational aid, it is all the more incumbent upon those which she has chartered, and in a greater or less degree nurtured, to do voluntarily that service which she has little or no power to enforce. Moreover, since the problem is so largely an industrial one,—is one, therefore, of applied science,—it seems fitting for the Institute of Technology to take the lead in proffering and organizing this co-operative help. And in developing this type of service the Institute would but be carrying forward its legitimate work as outlined so cogently in that address on the "Objects and Plan of the Institute of Tech-

nology" which, prepared and published in 1860 by Professor William Barton Rogers, has served ever since as a sort of written constitution for its officers.

In just what directions the Institute should go in this community service it would be impossible to indicate. The scope of its new activities must be gradually determined and the nature of its enlarged services slowly perfected by a cautious, thorough working out of the many problems involved. But it is perhaps of interest to suggest some of the ways in which Technology might be of notable help to the state, and therefore to the entire country, not only without detriment to her present work, but, on the contrary, with distinct benefit to her students, to her teaching staff, to her hold upon the affections of the people, and to her general standing and reputation.

Since this is a state, not an Institute problem, it would be wise for the Institute first to enlist all the higher educational forces of the commonwealth in working out some plan through which, jointly, they may help Massachusetts to solve those perplexing problems of commercial growth and of industrial education which to-day confront her. Incidentally such a partnership would be of immense benefit to education itself, which suffers in few ways so much as through lack of co-operation among those colleges, universities, and schools of applied science which not only should be laboring together for the common good, not only should be avoiding by mutual agreement those duplications of resources and of effort that keep them all painfully poor, but also should be devising some plan by which students may be transferred from one to another without loss of time and effort, and may be brought thereby under those varied stimuli of environment and teaching so beneficial to ambitious youth.

Having perfected some general plan of action, the associated institutions would then do well to submit their scheme to the criticism of those leaders of commerce and industry who consciously or unconsciously are seeking just this kind of help. Having, from this new point of view, reshaped their plans to meet the practical needs of the situation, the educational institutions and the manufacturers together could go to the General Court and easily secure such legislation and aid from the general treasury as may be necessary. While, as already said, it is impossible and indeed presumptuous to forecast what that joint plan might be, it would almost of necessity include some such recommendations as the following:—

(1) That there be a scientific census of Massachusetts to ascertain all pertinent facts regarding the character, extent, etc., of every existing industry and the possibilities of establishing new ones; regarding existing means of transportation by land and water and the needs of new development; regarding the mineral resources, water powers, soils, etc., of the State, and the best methods of their utilization.

(2) That the labor question be given dispassionate study as to problems of quantity, quality, supply, mobility, organization, and, above all, education.

(3) That problems of legislation and taxation have systematic and practical investigation in the light of their bearing upon present and future conditions in the industries of Massachusetts.

(4) That communities be brought together, through federated boards of trade or in some like way, so that industrial and commercial questions may be scientifically treated as a whole.

(5) That one or more museums be established to serve

as centres for the collecting and disseminating of all information bearing upon industrial and commercial conditions.

(6) That public laboratories be instituted in large manufacturing centres for the working out of those new chemical, physical, and mechanical problems with which all industries are every day confronted.

(7) That extensive and accessible means for the education of the workman in manual efficiency and executive power be provided, so that the pressing demand for skilled workers and for competent foremen and superintendents may be supplied. And

(8) That, as far as possible, the teaching and research staffs, the laboratories, and the buildings in general of existing higher institutions of learning be utilized for carrying out the above and other cognate plans and investigations.

In elaboration of the last suggestion it would doubtless be pointed out that in an investigation of the resources of the state, and in a study of the intricate problems of labor, of taxation, and of legislation, the trained scientists and economists of the higher institutions could, in co-operation, reach definitive and acceptable results. It would be shown that a central commercial museum would naturally be placed in charge of the Institute of Technology, and that, with subsidiary museums in the other large cities, it could do that service to the state which the Philadelphia museums are so effectively rendering for Pennsylvania. It would point out how economical, how effective, and how fully in line with modern development it would be to make the laboratories of the Institute of Technology, of Harvard, of Tufts, of the Worcester Polytechnic Institute, of Amherst Agricultural College, and of those other higher institutions which possess them, public labora-

tories in which, under proper regulations, any manufacturer, farmer or other citizen, as well as the State itself, might bring genuine problems for study and report. And, finally, it would probably be shown how easily and properly, without any damage to the work of the regular students and without loss of prestige to the institution, the buildings, laboratories, and teaching force of a college might be placed at the service, under carefully guarded limitations, in the evenings, in vacations, and even, to an extent, in the daytime, of those men and women who, unable to pursue a full course of higher education, are still eager and ready to take such studies and exercises as may fit them to lift themselves higher in the intellectual and industrial world, and to make themselves thereby of greater worth.

To have its problems of industry, commerce, and education taken up systematically and in a scientific spirit by its higher institutions working thus harmoniously would bring Massachusetts again to the front as the leader of manufacturing communities. It would restore to her, moreover, her somewhat waning prestige as the educational exemplar of America. The reactive effect upon the higher institutions themselves would be no less marked; for such public service as this would dissipate that artificial atmosphere which now surrounds and hampers the undergraduate, would bring about that close contact with the world so necessary to the maintenance of vitality, freshness, and power in the faculties, would make the value of higher education so patent to legislators, workingmen, and capitalists that the colleges would no longer suffer through lack of financial aid and of public sympathy, and would so infuse the whole educational system, from top to bottom, with life and energy that it would then be comparatively easy to bring that system, in its methods and ideals, into

harmony with the newer needs and wider opportunities of modern civilization.

To work in this way for the development of Massachusetts would not make the Institute either sectional or provincial; for its students would still come from and its graduates would still go to every centre and corner of the United States. To enter in this manner into the problems of industrial life and to take within its doors the workingman would not cheapen or "popularize" the Institute courses to the hurt of regular undergraduates. It would, however, "democratize"—to use a barbarism—Technology by bringing it close to the people and to the daily problems of the citizen; and this making itself really democratic is what education to-day most needs to do. Whether it be the primary school or whether it be an institution of the highest education, only that school in this twentieth century can survive which, stepping out of academic isolation and into the midst of the social struggle, does active and notable service in uplifting the individual through the general advancing of economic and educational efficiency.

To take the initiative in this new form of educational service is, it seems to me, the great present opportunity before the Institute. If she accepts it, she will continue to be in the future, as she has been in the past, the leader of leaders in modern education.

JAMES P. MUNROE, '82.

WHY TAKE THE FIRST TWO YEARS AT TECH?

The following theme was written by a student as a part of the work in Second-year English. Students were asked to discuss the question whether, in case a man has only four years in which to get his degree from the Institute, it will be more profitable for him to take the first two years at some college or at the Institute. The purpose of this subject was to set the students thinking concerning the comparative value of life and work at college and at the Institute when compressed within the limits of four years. Most of the students took the side of the question here presented, and of their views this theme is fairly representative. In point of expression, however, it is much above the average.

Should a man go to another college for two years before entering Tech? If he does so and spends four or even three years at the Institute, he doubtless gets a better education than if he did not do so, but by delaying his entrance upon a self-supporting life he does not only himself, but the community, a serious wrong. Indeed, I believe that the long delay between the attainment of manhood and the foundation of a home by our young men is largely responsible for our most perplexing social problems. A man must, then, enter as a Junior. No college in the country, however, puts a man in a position to enter Tech as a Junior after two years of work, and to do extra work at Tech is difficult in the extreme, not to say detrimental to health. For this reason, therefore, it is impossible for a man to spend two years at another college and graduate from Tech after four years of study at the two institutions.

Supposing, however, that some college does give the necessary work in the first two years, a question arises as to whether it would then be better to go to that college for that time. The question is really one of the comparative advantages of life at other colleges and at Tech. The advantages of the former I will endeavor to

sum up, using such information as my contact with men of other colleges has afforded me.

The most obvious advantage of other colleges is that both tuition and living expenses are far below those at Tech. Another striking advantage is the dormitory system. To meet one's fellows constantly, to have companionship when unable to work, to be free from the dangers arising from a mischoice of one's boarding place, are things which every Tech man must appreciate. Such a system would do much to mitigate the first tedious, uphill, lonesome year, which has proved the ruin of many excellent men here. In addition to these advantages, it is almost universally urged that "college life" produces broader men than the technical life. Our own college paper comes out every week or so with an editorial on the broadening effect of the classics and other collegiate studies and the narrowing effect of technical studies. Thus the question is one of "college life" *vs.* Tech life.

There is, however, something to be said in favor of Tech life. The extra expense of tuition and board at Tech is a serious drawback. I, however, consider my money well invested, for, when looking for a job last summer in the Far West, I found the words "one year at Boston Tech" good for one hundred dollars a month every time. I had one offer of one hundred and fifty. At the end of four years I hope to see the same name bring more. I noticed also that the word "college" generally made contractors wary about taking me as a gift, but "Tech" was different. If a man can possibly manage to do so, I think he will find it pays to spend the extra money. The reputation of Alma Mater will make up much of this money during summer vacations.

The dormitory system, as compared to our own abominable method, certainly counts strongly in favor of as much time spent elsewhere than Tech as possible. If a man, however, can stand the Tech system for one year, it becomes much easier for him thereafter. There is also the fact to be considered that Tech life is more like real life. The man who wishes to work on the Bering Straits tunnel must be able to stand loneliness, and the first year in Boston admirably fits a man for such work in many ways. Then,

too, the "college" is not all plain sailing, its dangers being, however, diametrically opposed to those of Tech. Many a Freshman goes to pieces at other colleges from conviviality, just as the Tech men do in their attempts to find friends and forget their lonesomeness. This question of the relative advantages of the two systems depends, of course, largely on individual temperament. I prefer to put up with the boarding-house system in order to enjoy the advantages of Tech life.

The main plea in favor of "college life" is that it broadens a man. Now, as I understand a broad man, he is a man who is able to survey all questions and all objects from an at once impartial and disinterested standpoint; in other words, to form a true estimate of the acts of his fellow-men, and to be able to appreciate the world in which he lives for its own beauty and not for what he can make out of it. The question, therefore, is whether or not Tech is superior to other colleges in giving such a view.

Originally, this question was that of whether the classical or scientific education was best adapted to broaden a man. The theory that a scientific education was ill adapted for this purpose was long ago exploded, and to-day nearly all colleges pay as much attention to the sciences as the classics. Since the same studies are, therefore, pursued at Tech and elsewhere, the question narrows down to the methods of instruction and the reception of this instruction; in other words, to a question of atmosphere. The question is, then, Does the Technological atmosphere render a man broader, more intelligent and disinterested, than that of other colleges?

The Tech atmosphere does make a man broader, more intelligent and disinterested than that elsewhere. Men come to Tech because they have heard that by so doing they may become rich. In the majority of cases which I have been able to observe, they leave with little love of money, but a firm resolve to be all-round men, masters of their craft, and to love and understand the works of nature. In those cases where this was not true the characteristics of the men were no product of Tech. No college is afflicted with a more thoroughly mercenary Freshman Class than Tech,

yet none turns out, so far as I have seen, a more disinterested or unprejudiced set of men. I am convinced that, considering the material with which she works, Tech does far more than any other college to broaden. The fact that the more commercial courses are the more popular is no argument against this fact, for, though sad, it is true that most of us realize that a man's disinterestedness and impartiality generally vary as the square of his bank account. Tech broadens a man, broadens him splendidly, if he will let her, and at the same time she gives him a means to earn his living,—a thing which the average college does not.

Above all other reasons for a man being totally a Tech man is the fact that he thus learns during his first years at college to work. At other colleges one may become polished and all that, but he doesn't learn to work. That is the point. That is why men from other colleges have such a hard time on entering Tech. That is why Tech men are in demand. That is why they pay the prices and stand the boarding-houses. That is why they can learn more than other students in a given time. It is because of the spirit of Technology. "Work is here for every man, and every man is here for work." That is pre-eminently the reason why I should take my entire course here.

I believe in taking my entire course at Tech. My first reason is that the reputation of the Institute pays the extra cost in cash. I believe it gives me a truer appreciation of the works of man, of man himself, and of the world in which he lives. I am ready for work and like it, and believe that I am being fitted for greater work in future. Finally, I am proud of being a Tech man through and through, without allegiance to any other college. Tech is, with all her drawbacks, the greatest college in the world; and that is why I am here.

JOHN H. RUCKMAN, '10.

GENERAL INSTITUTE NEWS

THE CORPORATION

A stated meeting of the Corporation was held at the Institute on the afternoon of March 11. Five names having been presented by the Alumni Association through the Nominating Committee, and these names, in accordance with the By-laws, having been submitted in print two weeks in advance of the meeting, the Corporation by ballot elected the following term members, each to serve until 1913: James W. Rollins, Jr., '78; Everett Morss, '85; and Arthur T. Bradlee, '88. Reports were read by the chairmen or their representatives from a majority of the visiting committees. Among other business transacted was the authorization of a sub-committee of the Corporation to have oversight of questions concerning the physical and social welfare of the students.

During the morning of the same day, upon invitation of the Acting-President, members of the Corporation and representatives of the Faculty met for an informal discussion of various important questions affecting the development of the Institute. There was general and free discussion, and much interest was manifested in the continuance of these informal meetings.

The will of Mrs. Elizabeth B. Osgood, recently filed, leaves $5,000 to the Institute.

DEPARTMENT NOTES

MINING ENGINEERING

Mr. R. H. Willcomb left for Montana the last of March, and Mr. Ralph B. Williams, recently returned from Ecuador, is working in the laboratory. Mr. John Klein, head chemist of the Calumet & Hecla Company, Buffalo, N.Y., is engaged on metallographical work under Mr. Hayward. Thesis work is well under way.

After twenty-six years of service the old Frue Vanner is being

dismantled. In securing a new Johnston Vanner, the Risdon Iron Works have greatly favored the Institute, and the Manhattan Rubber Company, of which Mr. A. T. Townsend, an Institute graduate, is president, has helped us to secure a corrugated belt therefor. New bucking boards and mullers, designed according to Western ideas, have been installed by Professor Bugbee, and a small grinder has been ordered.

BIOLOGY AND SANITARY RESEARCH LABORATORY

The Sanitary Research Laboratory and Sewage Experiment Station is to be continued for another year. The anonymous donor has recently given the Institute $5,500 for this purpose,—an addition of $500 to the previous annual donation. This means much for the Institute, aside from what the station is doing for sanitary progress in general. No educational institution in the world is equipped with such facilities for instruction in this branch of Sanitary Science.

Professor Sedgwick addressed the Alumni Association of St. Luke's Hospital, New York, at the University Club in that city on February 14 on "The Outlook for Preventive Medicine in the United States." A few days earlier, on February 10, he spoke before the Section of Public Health and Sanitation of the New Jersey Conference of Charities and Correction on "The Relation of Public Health to Organized Charity." He has also been invited to give in June next the Address in Medicine, which forms a part of the annual programme of Commencement week at Yale University. He recently attended in Washington, as a member of the Board, a meeting of the Advisory Board of the Hygienic Laboratory, United States Public Health and Marine Hospital Service, called to consider the latest aspects of the typhoid fever situation in Washington, D.C.

Toward the end of the first term a professional society was for the first time organized by the students of the Biological Department, under the name of The Biological Society of the Massachusetts Institute of Technology. Its purposes are to further social intercourse among students of biological subjects, to provide a

social meeting ground for Instructors of Biology and their students, and to promote the knowledge of biological subjects by discussion and especially by addresses by invited guests. Graduate and undergraduate students in Biology, Sanitary Engineering, and the Sanitary Option of the Course in Chemistry are eligible for membership. Mr. Scott MacNutt, '08, has been elected president, and Mr. R. N. Hoyt, '07, secretary-treasurer. The first formal dinner of the society was held on February 19, when Professor Sedgwick discussed the outlook for Biology and Sanitary Engineering in the twentieth century. At the second dinner, on March 25, Mr. Lyman Underwood gave an illustrated talk, entitled "With Canoe and Camera in the Wilds of New Brunswick." Present membership in the society is about forty.

Professors Prescott and Winslow have just published with Wiley, New York, a new edition of their "Elements of Water Bacteriology," largely rewritten and expanded from 162+x to 258+xii pages.

Professors Winslow and Phelps presented on November 15, before the Sanitary Section of the Boston Society of Civil Engineers, a report on their investigations carried out during the last two years on the purification of Boston sewage. While the staff of the Sanitary Research Laboratory has taken up many special phases of the general problem of sewage treatment, chemical, bacterial, and hydraulic, the central thread of its work has been the development of a rational process for the treatment of Boston sewage when its present discharge into the harbor becomes more objectionable. The report made on November 15 has recently been published in full in the December number of the *Technology Quarterly*, with outlines of a plan for the treatment of Boston sewage on trickling beds, and subsequent disinfection of the effluent. New experimental filters have been constructed at the Experiment Station, and experiments are now under way upon the details of this process. Particular attention is being paid to the rate of filtration, the depth of material of trickling beds, and the feasibility of disinfection by means of electrolytic chlorine. Studies are also being carried out at the station on the septic treatment of sewage sludge, on the rate

of absorption of oxygen by water under different conditions, and on the distribution of bacteria through the air of drains and sewers.

February 6 Professor Prescott addressed the Boston Society of Homœopathic Physicians on the subject of the milk problem in large cities, giving an account of his methods of inspection and the results that have been obtained in bacteriological control of milk on a large scale during the past three years.

Early in March he also addressed the members of the staff of the Research Laboratory of the General Electric Company at Schenectady, N.Y., upon the sanitary aspects of milk supply in great centres of population.

RESEARCH LABORATORY OF PHYSICAL CHEMISTRY

In place of the Seminar for Research Reports which has been held in previous years, the Research Laboratory has instituted a weekly colloquium, which takes the form of an evening smoker. At each meeting some topic in theoretical chemistry is considered, and the discussion is opened by one of the members in a general review of the subject. The colloquium is being attended not only by all members of the Research Laboratory, but by a number of men from other departments of the Institute and from neighboring colleges. The following subjects have already been presented: Conductivity in Non-aqueous Solutions, Mr. Kraus; The Absolute size of the Atom, Mr. Tolman; Tautomerism, Mr. Johnston; Werner's Valence Theories, Professor Sherrill.

One of the most difficult investigations undertaken in this laboratory has just been concluded by Mr. E. W. Washburn, who has found the relative amounts of water combined with the positive and negative ions in solutions of potassium, sodium, and lithium chlorides. The perfecting of the experimental method necessitated the working out of several new analytical methods of great nicety. The investigation has demonstrated beyond question the hydration of the ions.

The annual grant received by Professor A. A. Noyes from the Carnegie Institution, for the prosecution of researches on the

properties of electrolytes in aqueous solution, has recently been raised from $2,000 to $3,000.

MATHEMATICS

Mrs. Joseph J. Skinner, whose husband was long a member of the mathematical department of the Institute, died at her home in Oneida, N.Y., in January.

Professor Tyler spoke on "The Teaching of Plane Geometry in Secondary Schools" at the February meeting of the Association of Mathematical Teachers of New England, held at Concord, N.H.

ECONOMICS

Professor Carroll W. Doten has been chosen a member of the Council on Co-operation of the Committee of One Hundred, appointed by the American Association for the Advancement of Science in furtherance of the betterment of the national health. This council is "organized from among the officers of leading associations and organizations of America for the purpose of ultimately framing legislation to be introduced in various States and the Houses of Congress for the purpose of working out methods by which municipalities, States, and the national government may co-operate for the betterment of the national health." On February 4, at the request of the Chief of the Bureau of Statistics of Labor, he addressed the Joint Committee on Labor in support of a bill providing for the compilation and publication of certain social statistics gathered in the decennial census of 1905.

Professor Dewey attended the annual meeting of the American Economic Association at Madison, held Dec. 27–31, 1907. He acted as chairman of the Round Table Conference on Money and Banking, and his remarks will be published in the Proceedings of the Association. He was re-elected vice-president of the Association.

On January 12 he attended a meeting of the Advisory Committee of the Thirteenth Census, held in Washington to consider plans for the thirteenth decennial census. H. R. Bill 7597, which is now under discussion, was carefully scrutinized.

THE UNDERGRADUATES

THE CLASSES

1908.—President Rapelye has presided at four meetings of the class since the last number of the REVIEW was issued. The business transacted was as follows:—

At the twenty-eighth regular meeting, December 18, Basil L. Gimson, Raymond W. Ferris, and Hubert W. Flaherty were chosen a committee to handle the election of the Portfolio Committee. Plans for the New Year's Eve celebration were discussed. The executive committee was empowered to make arrangements for a late dinner at the Union on that night.

The twenty-ninth regular meeting, December 30, was called by the Institute Committee to consider the question of using Copley Hall as a temporary Walker Memorial. The class heartily approved of the plan, and left the matter of resolutions to that effect to a committee to be appointed by the chair, this committee to confer with the committees of the other classes.

On February 19, at the thirtieth regular meeting, a committee was appointed to draw up resolutions expressing regret at the death of W. W. Boynton, '08, Course II. Kurt Vonnegut and Maurice Allen acted for the class.

Whereas it has pleased Almighty God, in his infinite wisdom, to take from us our beloved friend and classmate, William Wilmot Boynton; and

Whereas we, the members of the class of 1908 at the Massachusetts Institute of Technology, feel deeply the loss of our beloved friend and classmate,—be it

Resolved, That we extend to the bereaved family our heartfelt sympathy; and be it

Resolved, That copies of these resolutions be sent to the afflicted family, and that they be published in *The Tech*.

On March 2, 1908, the class voted to hold the Class Day elections as in former years.

The celebration on New Year's Eve was a great success. The executive committee provided a very enjoyable Dutch supper for the fellows. Dean Burton was the only speaker. He gave some good advice, and incidentally told a few stories that were listened to with great glee. Just before midnight the class, led by President Rapelye, did a snake dance down to Rogers Steps, and welcomed the New Year in with rousing cheers and songs. Yes, "Bill" Adams was there, of course, and "Spike" McGuigan let him lead a few cheers.

The following is an extract from the diary of Roger Rice, Course I., 1908:—

Friday, Dec. 20, 1907.—Reunion of the C. E. Summer School of Rangeley (1907) at the Tech Union. About twenty-five present, including all of the "Profs" at Summer School, Professor Porter's daughters, and "Bill" Breed. Dean Burton gave us some pleasant reminiscences of former Summer Schools. Barnett, 09, was presented with his favorite brand of Worcestershire Sauce during the dinner. The famous delectable brand of Pickford's molasses cookies were on hand in abundance and again scored.

Harry Spurr, '08, was toastmaster, and, as he introduced each speaker, he recited a little verse about him, and did much toward making the dinner the success that it was. The 1908 men who went to the Summer School, besides acquiring valuable knowledge, enjoyed every minute of the time spent at Rangeley.

W. E. Barton, S. H. Daddow, R. W. Ferris, H. Webb, and E. I. Williams were elected to the Portfolio Committee, and now have the work well in hand. It is expected that the 1908 Portfolio will be an especially attractive one, as it will contain pictures of all the class teams.

Bill Adams, ex-'08, is not busy just at present, as the work for the Harbor Commission has been rather slack. He has been spending his time writing communications to *The Tech*. So far he has been very successful in getting answers.

"Shirley" Ellis, ex-'08, wants to be remembered to everybody. He is engaged in the insurance end of engineering, and is travelling in New England.

Word comes from New Haven that "Bill" Mahoney, ex-'08, Course I., is head man in the Senior Class at the Sheffield Scientific School. Nice work, Bill, old boy. "Bill" Given, ex-'08, is also at New Haven, and is giving a good account of himself.

"Jack" Caton, ex-'08, was up to Tech the other day. He was unfortunately taken sick in December, and missed his "mid-years." He is preparing for the exams. for the Philippines.

The thing that has been hanging over the heads of all '08 men has finally dropped on top of us. "Thesis" has at last got us in its grasp, and the final struggle is on.

JOHN T. TOBIN, *Secretary.*

PROFESSIONAL SOCIETIES

Civil Engineering Society.—T. H. Wiggin, '95, head designing engineer of the New York Board of Water Supply, gave an interesting talk February 26, at the Union, on "New York's New Water Supply."

L. C. Wason spoke, March 18, on "Reinforced Concrete."

Before one hundred and fifty members of the society at the Union, March 30, Professor Swain gave a talk on bridge building with special reference to the Quebec bridge disaster.

Mining Engineering Society.—Professor E. E. Bugbee, of the Mining Engineering Department, spoke March 2 on the cyanide process of extracting gold.

P. H. Heimer, '08, then gave a detailed account of how he had been supplementing his school work with practical experience during the last summer in a smelter in Montana.

Architectural Society.—W. S. Parker, with R. Clipston Sturgis, architect, Boston, gave a very detailed talk on the plans and construction of the new First National Bank on Franklin Street, between Congress and Federal Streets, on March 17.

At the smoker, March 2, C. H. Blackall, a well-known Boston

architect, who has just returned from a trip abroad, gave a talk, illustrated by lantern slides, on "The Recent Architectural Development of Germany."

Chemical Society.—"Chrome Tanning" was the subject of a very interesting talk by Mr. Claflin, president of the Avery Chemical Company, on March 4 at the Union.

Professor W. H. Walker gave a short, comprehensive discourse on patents and their accompanying troubles of litigation at the smoker on March 31.

Electrical Engineering Society.—February 20 a number of interesting talks were given by the members at the Union. "Irrigation and the Application of Electricity to it" was the subject treated by Mr. Benjamin Bullard, '08. Mr. E. A. Kilburn, '08, gave a description of a breakdown in the electrical plant of a Connecticut town, and how the plant was finally put in running order. "The Requirements of a Student entering the Electrical Department of the University of Copenhagen, Denmark," was the subject of Mr. V. E. Bird, '08.

On March 5 Dr. Steinmetz spoke on the relation of the electrical engineering student to the practice of his profession.

Biological Society.—About forty members attended the dinner at the Union March 25. The principal speaker was Mr. W. Lyman Underwood, who gave an extended account of his last summer's journey through Labrador, illustrated with lantern slides made from photographs taken during the trip.

ASSOCIATIONS AND CLUBS

Chicago Club.—Twenty-two members gathered at the Marliave Hotel February 25. A meeting after the dinner resulted in the election of H. Lockett, president; R. C. Walter, vice-president; S. A. Guthrie, secretary; M. W. Tilden, treasurer; and J. Mills, recording secretary.

New York State Club.—At the meeting of March 9 C. J. Belden, '09, was elected president; L. A. Freedman, '08, vice-president; P. D. Terry, '10, secretary; H. W. Dun, Jr., '08, treasurer; H. E.

Batsford, '08, and W. I. Griffin, '08, were elected to the executive committee.

British Empire Association.—The association dined on March 11 at the Union.

An invitation from the Harvard Canadian Club to hold a joint dinner early in April was accepted.

Pennsylvania Club.—The Pennsylvania Club held a dinner at the Union March 19, at which twenty-one men were present.

Iowa Club.—The men from Iowa held a meeting March 26 at Technology Chambers for the organization of a State club. At Iowa State dinner will be held April 4.

Southern Club.—At Howe Hall, March 27, over twenty-five members of the Southern Club gathered for their first dance, J. G. Reid, '08, acting as floor director.

Mrs. Stephen Smith, of Livingston, Ala., was chaperone.

Mechanic Arts High School Club.—Before the Mechanic Arts High School Club at the Union, February 24, Professor Dugald C. Jackson gave an outline of the losses of energy in manufacturing processes.

Civic Club.—On March 6, at the Union, J. G. Reid, A.B., called the meeting of the Civic Club to order, and introduced Professor Arlo Bates to the seventy-five men present.

Professor Bates in an entertaining manner outlined the system under which a real country town-meeting is carried on, and his effective illustrations of country characters and their behavior in meeting were much appreciated.

The first article in the warrant was concerning the advisability of obtaining a ways and means to prevent auto-speeding.

The second question considered was the advisability of an appropriation for the unemployed.

The third article was on a resolution and appropriation to compel removal of bill-boards.

On the question of license or no license, the meeting adjourned for refreshments.

Brotherhood of St. Andrew.—At the first regular meeting of the Tech Brotherhood, held March 15 in Trinity Church, H. E. Weeks,

'08, was elected director for the year, and R. H. Ranger, '11, secretary and treasurer. After a short talk on the character of the brotherhood work, President Gardiner of the national assembly conducted the admission service for nine charter members.

NOTES

In order to afford quiet places for study during unoccupied hours, recitation-rooms in Rogers, Walker, Eng. A, and Lowell have been opened for study when not in use for recitations. Schedules of these rooms have been posted on the general bulletin boards in the respective buildings.

Frederick H. Newell, '85, chief engineer of the United States Reclamation Service, spoke at a student convocation held on March 11.

R. J. Batchelder, of the regular students, and M. P. Meade, of the specials, won the two fifty-dollar prizes offered each year by the Boston Society of Architects. Mentions were given in the following order: First mention: E. I. Williams, S. O. Clements, H. H. Bentley, and T. Williams. Second mention: C. C. Ford, A. M. Emerson, H. S. Hazen, C. S. Clapp, and J. R. Tabor. Third mention: R. G. Crane and E. M. Price.

ATHLETICS

NEW ENGLAND MEET

At the meeting of the New England Intercollegiate Athletic Association held February 15 it was decided to accept the offer of Technology and to hold the annual track and field meet of the Association at Tech Field, Brookline.

In other years this important meet has been held on the Worcester Oval at Worcester.

B. A. A. GAMES

With the fastest time made at the B. A. A. Meet, the Technology Relay Team came within $2\frac{4}{5}$ seconds of the world's record for this distance.

TRACK TEAM

Manager D. C. McMurtrie, of the Technology track team, '10, announces the following schedule, complete for the season:—

April 11.—Spring class games at the Field.
April 25.—Relay games at Philadelphia.
May 2.—Tech-Maine dual meet at the Field.
May 9.—Tech-Brown dual meet at the Field.
May 22 and 23.—Intercollegiate meet at the Field.

THE GRADUATES

ALUMNI ASSOCIATION OF THE M. I. T.

Following is the result of the alumni vote polled by mail during November and December, and counted Dec. 20, 1907. (This was inadvertently omitted from the January issue of the REVIEW.)

President, Walter B. Snow, '82; vice-president, Albert F. Bemis, '93; secretary, Walter Humphreys, '97; Executive Committee, Howard L. Coburn, '87, and W. Spencer Hutchinson, '92; Nominating Committee, Charles T. Main, '76, Allyne L. Merrill, '85, and Andrew D. Fuller, '95; Committee on School, Henry Souther, '87, Advisory Council on Athletics, J. Arnold Rockwell, '96.

In the last number of the REVIEW it was stated that abstracts of the reports made at the annual meeting of the Alumni Association would be published later. Inasmuch, however, as these are to be printed in full in the annual report of the Alumni Association which will soon be mailed to all members of that body, it is deemed unnecessary to print them in abbreviated form in the REVIEW.

NORTH-WESTERN ALUMNI ASSOCIATION OF THE M. I. T.

The annual meeting and banquet of the North-western Association was held at the University Club of Chicago, on Saturday evening, February 29, and was presided over by John T. Cheney, '03, president of the association.

Fifty-seven members and two guests, Mr. Everett Morss, of Boston, and Mr. Isham Randolph, of Chicago, sat around the board, and gave many a rouser before the evening's festivities were over.

Mr. Randolph, who was a member of the Panama Canal Commission appointed by President Roosevelt to study the problem of the canal, entertained the association with a most interesting lecture on the subject of the Panama Canal, illustrated by stereopticon views.

Mr. Morss made an address which went home to the hearts of all Tech men present, and in a most pleasing manner made clear to his hearers the true history of the reorganization and re-establishment, upon a sound footing, of the Massachusetts Institute of Technology, which has been going on under the direction of able and loyal men since the subsidence of the question of a merger with Harvard University.

Among other things, Mr. Morss said: "Don't sit back and criticise, and get disgruntled. Back us up: give us support. You all owe something to the Institute, if she did you any good."

This sentiment was the keynote which inspired the speakers who followed Mr. Morss.

T. W. Robinson, '84, spoke briefly, urging a renewal of devotion to the Institute.

Colonel W. H. Bixby, '70, favored the sinking of personal views in favor of opinions which might be reached through the careful consideration of the Faculty.

W. B. Allbright, '78, scored the men who scorn what the Institute did for them, and urged that we be loyal. "Never forget," he said, "that your training at the Institute was the greatest thing you ever had."

Throughout the evening the danger of becoming too serious was prevented by the frequent honk-honk of an automobile horn concealed under one end of the table and the clang, clang, of a big brass gong concealed under the other end.

P. W. Moore, '01, and his melodious voice, Con. Young, '96, and his songs, and a general feeling that "all's well with the world," made the late hours steal in before it was realized that night was on and March was coming in with an ice storm, like a lion.

The officers chosen for the year 1908 were: J. L. Shortall, '87, president; Richard E. Schmidt, '87, vice-president; Ernest Woodyatt, '97, secretary-treasurer; F. K. Copeland, '76, Samuel D. Flood, '90, Edward M. Hagar, '93, Mortimer Frank, '97, Executive Committee.

ANDREW W. WOODMAN, '90, *Secretary-Treasurer*,
909 Stock Exchange, Chicago, Ill.

THE TECHNOLOGY CLUB OF NEW YORK

The largest and most enthusiastic gathering of Technology men ever held in New York, about one hundred and thirty in number, assembled at the annual dinner of the club at Hotel Knickerbocker, Feb. 29, 1908, and warmly greeted Dr. Arthur A. Noyes, Acting President of the Institute, and Mr. James P. Munroe, Secretary of the Corporation. In their honor, banners of the classes of '86 and '82 were included in the decorations; and in honor of the Institute's first graduates, represented among those present by Mr. Whitney Conant, appeared the flag of '68.

The addresses by Dr. Noyes and Mr. Munroe received close attention, and will go far to strengthening interest in the work of the Institute and uniting the alumni here. Professor Charles R. Richards, '85, now of Columbia University, spoke for the Tech man in New York. The other speakers included Hon. Herman A. Metz, Comptroller of New York City, Hon. Leslie M. Shaw, ex-Treasurer of the United States, Hon. William R. Willcox, chairman New York Public Service Commission, Dr. John H. Finley, president of the College of the City of New York, and Frank J. Sprague, "the father of electric railroading." All the speakers received rousing M. I. T. cheers.

A feature of the evening was the singing of Tech songs, led by William S. B. Dana, '98, at the "Singers' Table." The souvenirs were booklets in Technology colors, containing the words of Tech songs. A telegram from the North-western Association at Chicago, extending best wishes "for a year of rising enthusiasm," was read, and received with precisely the enthusiasm described; and a cordial message of good fellowship was forwarded to Chicago. A message was also read from members of '02, assembled in Boston, and the hope therein expressed that all New York men join in the 1909 Reunion in Boston was applauded.

The dinner marks a new record, and we hope next year to report an equally enthusiastic gathering of Tech men, with more than twice as many present to enjoy its pleasures and profits.

At the annual meeting of the club held early in February, vacancies caused by resignations from the Board of Governors of

Alex. Rice McKim,'86, who formed the original M. I. T. Association in New York, and since the incorporation of the club has been its president, and of Cecil B. Annett, '02, who has been treasurer of the club, were filled by the election of Charles R. Richards, '85, who has been chairman of the Membership Committee, and James E. Barlow, '05, who has been chairman of the House Committee. To fill the vacancy by expiration of time of Lyman A. Ford, '89, P. A. Warner, '92, was elected. At a subsequent meeting of the Board of Governors new officers for 1908 were elected, as follows: Charles R. Richards, '85, president; William H. King, '94, secretary; James E. Barlow, '05, treasurer.

An interesting meeting was held Feb. 18, 1908, at No. 48 West 54th Street, an eight-story building proposed as a possible new club-house to be used by the New York Alumni Clubs of Technology, Amherst, Brown, Dartmouth, Wesleyan, and Williams. Each club, in turn, held a smoker in the building. After the sixty men present at the Technology smoker had inspected the premises, the meeting was called to order by President Richards, and a report on the financial proposition was read by Allston Sargent, '98, chairman of the Building Committee of the Technology Club, and a report by George W. Kittredge, '77, on the building. A general discussion followed. The building, which was recently erected for a school, commended itself to those present as being very attractive and adaptable, with certain alterations, to the club-house purposes intended. The single question seemed to be whether, financially, the plan was satisfactory and feasible. The following resolution offered by Walter Large, '79, was passed:—

Resolved, That it is the sense of this meeting that the present Building Committee be continued for the purpose of proceeding with negotiations in regard to the building, 48 West 54th Street, and of investigating thoroughly and making a detailed report to the Board of Governors on the amount of revenue the club is capable of producing for the purpose of conducting this house in connection with the other five colleges.

During the year monthly meetings have been held at the present club-house, 36 East 28th Street, at which addresses have been given

on scientific and other subjects of interest to Technology men, after which "pipes, steins, and Tech songs" have been in order. Professor William T. Sedgwick gave us an admirable talk on "Technical Training and Public Service." J. Waldo Smith, '87, prepared a talk on "The Additional Water Supply System of New York City." He was unable, at the last minute, to come, but sent splendid lantern slides and an assistant engineer from the department of water supply who gave us an interesting talk, which was supplemented by remarks of a number of Tech men engaged in work for the department. In January, Professor George F. Sever, '87, now of the electrical engineering department, Columbia University, addressed us on the timely topic, "High Pressure Fire Service of New York City," with lantern slides. On March 28 H. B. Fullerton, '79, will talk to us on "Technology Methods of Pioneering," illustrated by lantern slides; and we hope that during the year Professor George V. Wendell, '92, now at Stevens Institute of Technology, and whom we were glad to greet at the annual dinner, will address us.

The larger our membership, the greater will be our facilities for affording club privileges and entertainment, for upholding our part in the new club-house plan, and for advancing in every way the interests of the Institute and Tech men, and we trust that every Tech man in or near New York City to whom this word shall come, and who is not now a member, will forthwith make application to join the club. The dues are only five dollars for members of the three latest graduated classes, and ten dollars for all others. A year's attendance at the Institute qualifies for membership.

We noted with pleasure that the secretary of '07, in the January REVIEW, urged men to visit the club. We want him to urge them to join, and assure them that this is the first duty and pleasure awaiting them in New York.

Announcement is now made to the class of '08 that on Saturday evening, Sept. 26, 1908, a smoker in their honor will be given at the club-house, to which they are all invited.

A communication has just been received from S. S. Philbrick, '98, Spokane, Wash., stating that sixteen Technology men met there in February, and decided to organize an "Inland Empire Associa-

tion," and requesting a copy of the Constitution of the Technology Club of New York. A copy has been forwarded with our best wishes.

WILLIAM H. KING, '94, *Secretary*,
36 East 28th Street, New York City.

THE TECHNOLOGY CLUB OF PHILADELPHIA

The first meeting of the year of the Technology Club of Philadelphia was held at Boothby's on the evening of February 5. An informal dinner was served, which was followed by the annual business meeting and election of officers. Mr. James Swan, '91, of the New York Shipbuilding Company, presented a very interesting paper on the history of the American mercantile marine. He showed, in a very pleasing manner, the development of the shipbuilding industry in this country from the early colonial days up to the time when it occupied an important place in the commerce of the world, and its later decline under the influence of foreign subsidized competition. At the conclusion of the paper there was a general discussion on marine and naval affairs which proved of particular interest because of the recent criticisms of the navy. The following officers were elected for 1908: president, Jere. R. Daniell, '97; vice-president, Frank H. Keisker, '97; secretary-treasurer, Percy E. Tillson, '06; executive committee, Clayton W. Pike, '89, Harry P. Coddington, '95, Fred A. Hunnewell, '97, Edgar P. Trask, '95, Lewis A. Miller, '01, H. LeRoy Walker, '05.

The second meeting of the club was held on Wednesday evening, March 11, at the City Club. The meeting was preceded by an old-fashioned Southern dinner, fried chicken, waffles, etc., which certainly was a pleasing novelty for the New Englanders present. Mr. Frank H. Keisker, '97, architect, spoke to the club on the various factors which enter into an architect's work, and the relation which these bear to the finished building. This was followed by a general discussion of architectural subjects.

It is the intention of the club to omit the formal annual dinner this year, and instead to substitute a series of informal

dinners. At the meeting following each dinner a paper on some subject of particular interest to Tech men will be presented. It is thought that these informal gatherings will result in a closer fellowship, a more active interest in the club, and a greater development of Tech spirit than has been secured in the past. The first meetings have been very successful, and there is every indication that 1908 will be the best year in the club's history. All Tech men within a radius of fifty miles of Philadelphia are urged to send their addresses to the secretary, in order that they may be kept informed in regard to the future meetings.

PERCY E. TILLSON, '06, *Secretary*,
3411 Walnut Street, Philadelphia.

WASHINGTON SOCIETY OF THE M. I. T.

The annual election of officers of the Washington society took place at the University Club on February 10. The result was: M. O. Leighton, '96, president; F. W. Swanton, '90, vice-president; A. C. Willard, '04, secretary; F. F. Longley, '04, treasurer; E. F. Allbright, '04, member executive committee.

The outgoing president, Mr. Francis Walker, '92, has been abroad on government business since last fall, and the members have greatly missed his presence at the monthly dinners. In fact, the society has lost several active members in the past year by their removal from Washington, while new men, in many cases recent graduates, have come to take their places. Among these recent arrivals are: W. J. Gill, Jr., '04, A. M. Holcombe, '04, C. F. Willard, '01, H. A. Kingsbury, '07, and George A. Griffin, all but the last of whom are acting as assistant examiners in the United States Patent Office.

With this infusion of fresh spirit and the excellent accomodations now afforded the society in the private dining-room at the University Club, there is every prospect of a successful and interesting year.

ARTHUR CUTTS WILLARD, '04, *Secretary*,
The George Washington University, Washington, D.C.

THE TECHNOLOGY CLUB OF THE MERRIMACK VALLEY

The annual meeting of the society was held on the evening of February 7 at the New American House, Lowell. Twenty-eight members were present. At the business meeting the following officers were elected for 1908: president, R. A. Hale, '77, Lawrence; vice-president, E. B. Carney, '93, Lowell; secretary, John A. Collins, Jr., '97, Lawrence; treasurer, W. O. Hildreth, '87, Lowell; member of executive committee, C. H. Eames, Lowell.

The secretary's report showed a card membership of sixty-six, with a mailing list of about one hundred and twenty-five. Sixteen members were admitted during the year. In addition, nine new members were taken in at the above meeting.

Dinner was served at one dollar a plate. The guest of the evening was James P. Munroe of the Corporation, who spoke on the subject, "M. I. T. and the Commonwealth." Mr. Munroe first sketched the development and present condition of the Middle West, calling special attention to the State University. This institution is rapidly becoming a strong competitor of our own Alma Mater, and Massachusetts must awaken soon to this fact, else it will be too late. This prominence and proficiency of the Western University has been largely brought about by State aid and the efforts of the State authorities. He suggested a scheme by which our own State could more fully utilize its colleges and universities to further its commercial, industrial, and educational development. The talk was of the greatest interest to all present, as it took up questions of vital importance to Technology, and questions which soon must be answered if she is to continue on her progressive path.

Those present at the meeting were as follows: John A. Collins, '97, Lawrence; Ralph E. Runels, '11, Lowell; Dr. John H. Lambert, '98, Lowell; Perley F. Gilbert, '95, Andover; Charles H. Eames, '97, Billerica; Marcus J. Cole, '08, Lowell; Albert T. Scannell, '08, Lowell; George H. Perkins, '99, Lowell; Herbert J. Ball, '06, Lowell; R. O. Ingram, '04, Lawrence; Stewart C. Coey, '06, Lawrence; George F. Hobson, '06, Lowell; George A. Nelson, '77, Lowell; Paul E. Chalifoux, '02, Lowell; Edgar H. Barker, '96,

Lowell; George W. Bowers, '09, Lowell; Austin D. Keables, '09, Lowell; W. O. Hildreth, '87, Lowell; H. V. Hildreth, '85, Westford; C. L. Kimball, '86, Lowell; John S. Boyd, '97, Lowell; Charles F. Hobson, '11, Lowell; S. H. Scribner, '11, Lowell; George Bowers, '75, Lowell; William P. Atwood, '76, Lowell; Richard A. Hale, '77, Lawrence; James P. Munroe, '82, Lexington.

JOHN R. COLLINS, JR., '97, *Secretary*,
67 Thorndike Street, Lawrence, Mass.

TECHNOLOGY CLUB OF NEW BEDFORD

A meeting of the Technology Club of New Bedford was held at the home of President E. B. Hammond on Thursday evening, February 20. The members listened to an interesting talk by James Stetson, '99, who described his trip to Hawaii and Mexico.

The engagement is announced of W. A. Robinson, Jr., '98, and Miss Dolliber, of Brookline.

CHARLES F. WING, JR., '99, *Secretary*,
34 Purchase Street, New Bedford, Mass.

THE TECHNOLOGY CLUB OF HARTFORD

A meeting of the Technology Club was held Saturday, Jan. 11, 1908, in the Rathskeller of the Hotel Heublein, when Frederick C. Moore, superintendent of the special risk department of the Hartford Fire Insurance Company, gave an instructive talk on fire insurance and the advantages of the sprinkler equipment. The talk was illustrated by lantern slides from pictures taken by himself at the Paterson fire and at other places, some showing where the system did wonderful work in saving property and others where it did not work because of careless construction and defects in valves, etc. Those present were Charles R. Nason, Charles L. W. Pettee, D. A. Richardson, Charles F. Barrett, George W. Baker, Howard H. Burdick, Clarence E. Whitney, Henry A. Fiske, F. C. Moore, Frank I. Davis, D. Parsons Goodrich, R. J. Ross, R. F.

Knight, S. Ellsworth Horton, of Windsor Locks, Ernest W. Pelton, of New Britain, Edmund P. Marsh, of Springfield, Charles P. Waterman, of Bristol, and A. C. Bedortha, of Windsor.

At the annual meeting of the club, held February 1 at the Hotel Heublein, Professor David Todd, of Amherst, delivered an entertaining lecture on Mars.

At the business meeting the following officers were elected: president, Clarence E. Whitney; vice-president, Charles R. Nason; secretary and treasurer, George W. Baker; board of governors, the other officers and H. H. Benedick and Edmund P. Marsh.

Those present at the meeting were: Henry Souther, H. P. Maxim, Charles P. Howard, Frederick C. Moore, George W. Baker, H. H. Smith, E. H. Lorenz, Ralph F. Knight, Clarence E. Whitney, H. H. Ensworth, R. J. Ross, Charles R. Nason, F. I. Davis, D. Parson Goodrich, Charles L. W. Pettee, Howard H. Burdick, and F. M. Blake, all of this city; Ernest W. Pelton and E. M. Parker, of New Britain; N. W. Dalton, of Thompsonville; Frank Cheney, of South Manchester; C. P. Waterman, of Bristol; S. E. Horton, of Windsor Locks; Edmund P. Marsh, of Springfield; and Wolcott Remington, of Stamford. Guests of the club were Professor Todd, Charles Hopkins Clark, Fred. Bassett of Dartmouth College, and Albert Morgan.

GEORGE W. BAKER, '92, *Secretary*,
P.O. Box 983, Hartford, Conn.

THE PITTSBURG ASSOCIATION OF THE M. I. T.

The majority of the fellows out here in Pittsburg have been too busy looking for jobs, or holding on to the ones they have, to give much time or thought to other less urgent matters. However, we believe that at least one hundred of them have become fairly well anchored again. Counting the fifty who answered the roll-call at our annual dinner and the fifty or more who could not attend on account of sickness, the nurse being on vacation, and other distressing circumstances, we have proof that two-thirds of our members are prosperous and happy, and that the recent financial "mix-up" is on the decline and two-thirds past.

Our annual dinner was held at the University Club's new home on February 26. Mr. Everett Morss came on from Boston, and brought about an hour's worth of the most interesting news—present, past, and future—that we have heard since leaving the Institute. We are under many obligations to Mr. Morss, and the Institute is to be congratulated on having so stanch a champion.

The affairs of the Association were intrusted for the ensuing year to the following officers: L. K. Yoder, '95, president; S. B. Ely, '92, vice-president; W. I. Bickford, '01, and C. S. Robinson, '84, executive committee. Waldso Turner, '05, was allowed one year off his five-year sentence as secretary-treasurer for good behavior.

After the coffee each man was called upon to give his name, class, present occupation, whether married, number of children, and a short life history since entering the Institute. Thus every man was a speaker of the evening, to the hearty enjoyment of every one else. Such reminiscences as that of Newbury, '98,—he might have been married, had he not left Maine,—were very interesting.

Our mailing list is somewhat antiquated, due to many of the men recently changing their addresses. We earnestly urge every one within one hundred miles of Pittsburg, who did not receive a notice of the last meeting, to correspond with the secretary at once.

WALDSO TURNER, '05, *Secretary-Treasurer*,
1173 Frick Building Annex, Pittsburg, Pa.

TECHNOLOGY ASSOCIATION OF NORTHERN CALIFORNIA

A circular was sent out during January, 1908, from which the following is taken:—

Early in November cards were mailed to the Tech men in California whose names and addresses could be ascertained, asking them to attend a dinner at the Hotel Metropole, Oakland, for the purpose of fostering Tech fellowship in this locality. Thirty-five replied affirmatively and forty-one negatively, but all thoroughly indorsed the plan.

At the dinner twenty-eight were present, and the early evening was spent

in eating, singing, and general conversation, followed by a business meeting, at which the men present organized themselves into the "Technology Association of Northern California." C. G. Hyde, '96, was elected president, and H. C. Blake, '06, secretary-treasurer. The president was empowered to appoint three members, who with himself and the secretary-treasurer would form the executive committee, which should draft a constitution to be presented at the next meeting. It was determined to hold the next meeting on Friday, December 13, in San Francisco, the place to be decided by the secretary-treasurer. The business meeting was then adjourned, and after a few songs and cheers the diners separated.

The second informal dinner was held at Tait's Restaurant on the date previously arranged. Eighteen were present, and a most enjoyable evening was passed. After the dinner, which was interspersed with songs, Tech yells, and general jollification, the meeting went into business session; and the form of constitution proposed by the general Alumni Association was taken up section by section, and discussed. With several minor changes, this form of constitution was adopted.

The secretary writes: "We have about forty members with whom I have come in personal contact, and they have all taken an active interest in the association. Besides these members there are about as many more who, I believe, will join before our first annual dinner, which takes place in Oakland or San Francisco on May 2d. By that date we hope to have a booklet giving the addresses of all the Tech men in California and general information regarding Tech clubs throughout the country."

HOWARD C. BLAKE, '06, *Secretary-Treasurer*,
2536 Bancroft Way, Berkeley, Cal.

THE TECHNOLOGY CLUB

The entertainment program of the club this season has been arranged with the aid of a committee of twelve, appointed last year by the Executive Committee.

On Tuesday, January 21, the sixth evening of the season, Mr. Melvin M. Johnson gave a talk on "Some Legal Relics." On

Wednesday, February 5, a business meeting was held, and four amendments made to the By-laws, as follows:—

Recent resident graduates are allowed a graded scale of dues; the regulations for members delinquent in dues are made stricter; the date of the annual meeting, formerly the second Monday in October, is changed to a date not earlier than the fifth nor later than the tenth of May; and, lastly, it is provided that the officers elected at the annual meeting shall not enter office until the Tuesday in June on which falls Graduation Day.

After the business meeting, Mr. H. H. Clayton gave an account of his novel experience in balloon racing, his subject being "My Balloon Trip from St. Louis to New Jersey, and the Probable Future of Aerial Navigation." Stereopticon slides added greatly to the interest in the talk.

On February 25, the eighth evening and third ladies' night, Mrs. Mabel L. Todd told of the "Latest News from Mars." Mrs. Todd accompanied the Lowell Expedition, led by Professor Todd, to the Chilean Andes in the summer of 1907, and her intimate acquaintance with the work of photographing and investigation enabled her to give a vivid account of the expedition and its results.

On March 24, the ninth evening and fourth ladies' night, an evening of music was given by Miss Evelyn G. Blair, soprano; Mrs. Ernestine Fish, alto; Mrs. Stephen H. Roblin, accompanist; and Mr. Harris S. Shaw, pianist.

On April 7, the tenth evening, Mr. Seth K. Humphrey gave a smoke talk on "Western Experiences." He gave a realistic account of the opening of the Cherokee Strip, Kansas cyclones, and a Wild West Show in Indian Territory. The great store of choice incidents related by the speaker, together with the lantern slides shown, made the talk one of the best appreciated in the season.

The club entertainments are usually held on Tuesday evenings. They have been well attended, the largest numbers being, for a ladies' night, one hundred and fifty-five, on the occasion of Mrs. Todd's lecture and, for a smoke talk, over one hundred, on the occasion of Mr. Seth Humphrey's talk.

By vote of the Executive Committee of the Technology Club,

members of other Technology clubs are allowed to use the Clubhouse in accordance with Section 7 of the House Rules (revised 1906). Members of this club may obtain from the Steward, or by mail from the secretary, the Uniform Inter-Club Membership Card which has been approved by all Technology alumni associations. This card bears an up-to-date list of all the associations, the secretary or representative of each, and his address.

The secretary solicits from other alumni organizations the exchange of notices, circulars, and announcements, to be posted on the bulletin board at the club.

The Alumni Association Register for all Tech alumni (whether members or not) who are visiting Boston is kept at the Club, and is always open for their use and inspection.

ANGELO T. HEYWOOD, '06, *Secretary*,
83 Newbury Street, Boston, Mass.

NEWS FROM THE CLASSES

1868.

PROF. ROBERT H. RICHARDS, *Sec.*, Mass. Inst. of Tech., Boston.

At the meeting of the alumni the class was represented by Jackson, Richards, Stevens, Tolman, and Whitney. It made a pleasant gathering, and the members greatly enjoyed talking over old times again. When at the New York meeting of the American Institute of Mining Engineers, Richards met Sears and found him looking well and prosperous. Richards went West, as far as Montana, to install some of his concentrating designs during the latter part of January, and in March he went to Lebanon, Pa., on a professional trip.—The secretary recently received a letter from John B. Duncklee, 35 Fairview Avenue, Orange, N.J. Mr. Duncklee is interested in a dredging operation down near Quibdo on the Atrato River in Colombia. He hopes soon to get his dredge completed and in operation.

1871.

E. W. ROLLINS, *Sec.*, 19 Milk Street, Boston, Mass.

The secretary spent the larger part of the year 1907 abroad, and is spending the spring of this year in California.

1875.

E. A. W. HAMMATT, *Sec.*, 10 Neponset Block, Hyde Park, Mass.

The twenty-sixth annual meeting and dinner of the class was held at Young's Hotel on March 6, 1908, at 7 P.M. Several new faces appeared, and at times there was quite a guessing con-

test as to who's who. At 9.15 President Hibbard rapped for order, and called for the records of the last meeting, which were read and approved. The reports of the secretary and treasurer were read and accepted, and upon motion, duly seconded, the secretary was directed to cast a ballot as that of the class for the following officers: president, Thomas Hibbard; vice-president, B. L. Beal; secretary and treasurer, E. A. W. Hammatt; executive committee, B. L. Beal, S. J. Mixter, W. P. Willard; and they were declared elected. Kinnicutt received much praise for his efforts to secure a larger attendance. (He asked the secretary for the address of one man who died eighteen years ago.) Howe during his remarks alluded to the fact that he, as well as some others, had been connected with the class but a short time, and thought some might feel that on that account they could not expect so warm a welcome. Beal took occasion to emphasize the position taken by the members of the Association on this matter; namely, that, no matter how short that time was, the man was just as welcome and his presence at our gatherings just as much desired as though he had been connected with the class for the full four years. Letters were read from W. F. Sargent, R. H. Cushing, George H. Eddy, Jr., W. C. Edes, C. W. Goodale, J. B. Stanwood, and Dr. W. H. Ruddick. The historian announced the marriage on Jan. 20, 1908, of W. H. Shockley to Miss May Bradford, and that during the year he had learned of the death of three members of the class: Frank Evans, died April 14, 1907; Frank H. Woodrow, died July 16, 1907; Edward A. Handy, died Nov. 21, 1907. The attendance was as follows: Beal, Bowers, H. Dabney, Dorr, Hammatt, Hibbard, Howe, Kinnicutt, Knowles, Lincoln, Lewis, Mixter, Plympton, Robinson, Simonds, Smith, Stoddard, and Willard. Adjourned at 10.30 P.M.

Frank Evans, son of Seth and Winifred W. (Brown) Evans, was born at Cincinnati, Jan. 8, 1852. He entered the Institute with the class of '75, but only remained one year, going into business in 1872 with the firm of Evans & Kinney, pork packers. On May 25, 1882, he was married to Miss Elene R. Macbeth, of Richmond, Va., and they have had two sons,—one, however, died

in infancy. For several years Evans's health was such that he felt obliged to live in Denver, and he died there on April 14, 1907.

1877.

RICHARD A. HALE, *Sec.*, Lawrence, Mass.

"The thirty-first annual reunion of the class was held at the Technology Club, Boston, Feb. 26, 1908. Vice-President Charles F. Lawton presided. The following officers were elected: Henry H. Carter, president; Charles F. Lawton, vice-president; R. A. Hale, secretary and treasurer. The members present were: John Alden, chemist, Pacific Mills, Lawrence; Charles A. Clarke, of the firm of Hill, Clarke & Co., dealers in machinery, Boston; Edward W. Davis, of the Puritan Press, Boston; Warren E. Fairbanks, with John A. Ferrell, dry-goods dealer, Boston; E. H. Gowing, of the firm of Moore & Co., engineers, Boston; R. A. Hale, principal assistant engineer, Essex Company, Lawrence; Walter Jenney, superintendent of Jenney Manufacturing Company, Boston; C. F. Lawton, superintendent of Board of Public Works, New Bedford; A. S. Locke, Waltham; George A. Nelson, assistant city engineer, Lowell; Harry C. Southworth, mining engineer in business at Stoughton; T. F. Stimpson, superintendent printing department, United States Finishing Company, Providence, R.I. Letters were read from John E. Hardman, mining engineer and expert, Montreal, and others, and telegrams were received from George W. Kittredge, chief engineer of New York Central Railroad, and George F. Swain, professor of civil engineering, Massachusetts Institute of Technology. After general informal conversation and exchange of experiences the meeting adjourned."

Wallace Hackett, a former '77 man, is mayor of Portsmouth, N.H. After leaving Technology, he followed the legal profession, which has been represented for many years by his ancestors. Owing to previous engagements, with some other reasons, he was unable to attend the meeting.—A report was circulated of the death of George Hewitt, of '77, that was said to have occurred last August. An in-

vestigation showed that an Englishman by the same name and a mining engineer died, and was confused with the '77 man, who is still very much alive.—Herbert Jaques has been re-elected on the Executive Committee of the United States Golf Association. He is still an active member on the committee of the Country Club, Brookline.—The material for the directory is being collected gradually, and delinquent ones are reminded to attend to the requests promptly.

1878.

LINWOOD O. TOWNE, *Sec.*, Haverhill, Mass.

The recent election of Rollins as a term member of the Corporation is a source of satisfaction to the class. Meanwhile the firm of which he is a member is progressing on its work on the Charles River Dam.

On January 11 the class was again the guest of Baker at the Union Club for its annual reunion and supper. Besides our host there were present Bradford, Collier, Edwards, Higgins, Nichols, Rich, Robertson, Rollins, Sargent, Sawin, Schwamb, Williams, and Towne. A general social time is the rule of these reunions, a "Who-is-it?" poem by Williams markedly suggestive of our host being the only ripple of change.

1879.

EDWIN C. MILLER, *Sec.*, Wakefield, Mass.

The annual meeting of the class for the year 1907–08 was held at the Hotel Brunswick, Boston, on Feb. 29, 1908. On account of the absence of Professor R. W. Lodge, president of the class, the meeting and dinner was presided over by Frank G. Stantial. The secretary sent out notices and ballots to fifty-seven names which appear in the class catalogue and also notices to eighteen names, in addition, of persons who were identified with our class while at the Institute, which names had been obtained from

the Alumni Association. Of this number only two responded,—Charles A. Washburn, who was present at the dinner, and Professor S. H. Woodbridge. There were also present F. G. Stantial, Professor William H. Pickering, A. M. Waitt, Professor George H. Barton, J. M. Cabot, and E. C. Miller. Letters were read from Professor R. W. Lodge, who was in California; Harry H. Campbell, Atlantic City; R. M. Hosea, chief engineer Colorado Fuel and Iron Company, Denver; William S. Stearns, of Cincinnati, Ohio; Henry A. Boyd, of Buffalo; F. B. Knapp, of Duxbury; H. J. Howe, engineer with the Rapid Transit Commission, New York; George F. Riggs, of West Virginia; Louis P. Howe, of Marlboro; Fred H. Lane, of New York; W. W. Macfarland, of Chester, Pa.; and Walter S. Allen, of Boston. The secretary also received regrets from Gooding, Coffin, and Hazeltine, of Boston; Dunbar, of Altoona, Pa.; Large, of New York; Hemingray, of Covington, Ky.; Harlow, Alden and Rea, of Pittsburg; and Eyre, of Philadelphia. There were twenty-seven ballots cast, and the following officers were elected: Fred. H. Lane, of New York, president; Frank G. Stantial, Boston, vice-president; Edwin C. Miller, of Boston, secretary; Allan M. Jenks, of New York, and Louis P. Howe, of Marlboro, business committee. It was voted to get out the next class catalogue at the time of the Second "Big" Tech Reunion in Boston, which will take place in June, 1909, and then to get one out every five years. After an interesting discussion in regard to the moon and Mars led by Professor Pickering, and of the earth and the Aleutian Islands, led by Professor George H. Barton, and other subjects too numerous to mention, the meeting adjourned at 11.15 P.M.

1882.

WALTER B. SNOW, *Sec.*, 170 Summer Street, Boston, Mass.

Miss Clara Preston Ames is to conduct a small party on a four months' trip to Europe during the spring and summer, leaving New York for Naples on April 25 and returning to arrive on August 27.—In a recent issue of the Boston *Evening Transcript* appeared a

letter from Frederic M. Noa under the title "Berlin's Lower Classes." The following is quoted therefrom:—

Berlin's gay Christmas-tide season has at last ended, the ushering in of the New Year shortly before midnight, Dec. 31, 1907, being observed with an uproariousness worthy of the American Fourth of July, and befitting the honor due to Germany's patron Saint Sylvester. It would appear that the saint, when living, was accustomed to having the loudest kind of noise around him. However that may be, certainly for many long hours of the weary night, and almost until the gray dawn, the racket of fire-works and the most unearthly yells, laughter, singing, and whistling, accompanied by the barking of dogs, went on uninterrupted. The festival was further enlivened by the underworld exercising the divine right of getting beastly drunk.

1884.

PROF. WILLIAM L. PUFFER, *Sec.*, 307 Equitable Building, Boston.

The secretary has received and read with pleasure an article from the Augusta *Chronicle* (Ga.) headed "The Chamber of Commerce compliments Colonel D. A. Lyle, Commandment at the Augusta Arsenal, Ordnance Department, U.S.A., with one of the prettiest banquets ever given in South." The date of this event was Jan. 6, 1908, and, as the account required the whole side of the paper, it is evident that '84 has scored again through one of the boys.—'84 is ever in the public eye, as again illustrated by the press in the following sample (Boston *Record*, March 5):—

BROOKLINE DUTCH HOUSE
Entered by Burglars.
Two Captured, but the Third Escaped.

Classmate Appleton, after these years of training, faced them with an empty revolver, and drove them out, telephoned for the police, and they were taken in. The query in the mind of the secretary is, Why did he have that revolver unloaded?

1888.

WILLIAM G. SNOW, *Sec.*, 1108 Penn Mutual Building, Boston, Mass.

Edward Webster Herrick died at his home, Riveredge, N.J., March 2. While on a vacation at Pinehurst, he had an attack of ptomaine poisoning, and, although he recovered sufficiently to return home, a subsequent attack, combined with some heart trouble, caused his death. Coming to the Institute from Northampton, Mass., he became active in football circles and played on the team during his full course, being captain of the championship team in 1887. He graduated in the Department of Mechanical Engineering, and first became connected with the B. F. Sturtevant Company, where he remained until 1892, when he became associated with Baker, Smith & Co., heating and ventilating engineers and contractors, New York, later becoming a member of the firm. Herrick was well known in his chosen line of work, and his firm handled the installation of the mechanical and heating and ventilating plants in some of the largest buildings in the country. He was connected with a number of societies, and was highly esteemed by a large circle of friends and acquaintances. He is survived by his widow.— The Boston *Transcript* of March 12 makes mention of the fact that

At the stated quarterly meeting of the Corporation of the Massachusetts Institute of Technology the only business of importance taken up was the annual election of alumni term members. The five nominated by the Alumni Association by postal card vote were James W. Rollins, '78, Arthur Winslow, '81, Arthur D. Little, '85, Everett Morss, '85, and Arthur T. Bradlee, '88. The Corporation elected J. W. Rollins, Everett Morss, and Arthur T. Bradlee for a term of five years, expiring in 1911....

Arthur T. Bradlee is a graduate in the Mechanical Engineering Course. After his graduation in 1888 he spent about a year in the Arlington Mills in Lawrence, Mass. Entering the employ of Harding, Whitman & Co. in 1889, he became partner in 1903. This company handle substantially the entire output of about twenty Southern mills and are the sole agents for the following worsted and cotton mills: Arlington Mills, Lawrence;

Whitman Mills and Manomet Mills and Nonquit Spinning Company, New Bedford; and the Eddystone Manufacturing Company, Pennsylvania. He has been prominent in alumni affairs, being a member of the Executive Committee of the Alumni Association in 1893 and 1894, and was one of the founders of the Technology Club, being a member of the Club Council since its foundation."

—Stone & Webster's "Electric Railway and Lighting Properties" Manual for 1908 is issued. It gives brief descriptions of the various properties under their management, together with summaries of capitalization, particulars regarding the securities and earnings and expenses for the year 1907. The following is a combined statement of the electric railway, electric lighting, gas and water power companies under the management of the Stone & Webster organization for the calendar year 1907: bonds and coupon notes outstanding, $44,895,000; preferred and common stock outstanding, $55,974,000; total capital issued, $100,869,000. The earnings and expenses in 1907 were: gross, $14,996,712; operating expenses, $9,973,314; net, $5,203,398; charges, $2,317,752; balance, $2,885,646; dividends, $1,304,406; surplus, $1,581,240.

—At the annual alumni dinner at the Brunswick, January 10, these '88 men were present: Collins, Brown, Holman, Keough, Claflin, Sawyer, Robb, Bradlee, Stone, Webster, Thompson, Pierce, and Snow. The report of the Committee on the School was presented by William T. Keough.

1889.

PROF. W. E. MOTT, *Sec.*, Mass. Institute of Technology, Boston.

The eighteenth annual dinner and reunion of the class was held at the University Club, Boston, on the evening of Feb. 10, 1908. The following men were present: Alley, Basford, Boutwell, H. French, Howard, W. S. Johnson, Kilham, W. W. Lewis, Laws, Linzee, Mott, F. S. Pierce, Russell, Rollins, Thorp, Thurber, Wales, Whitney, Williston. A brief business meeting was held, and it was unanimously agreed that the annual dinner be held regularly on

the evening of the first Monday in February instead of in June as hitherto. Every member of the class is urged to reserve this date for our annual reunion. A committee of five, to be appointed by the chair, was authorized to prepare plans for celebrating our twentieth reunion in 1909, and will submit the same at our next meeting. The committee will be glad to receive suggestions from any member of the class in regard to our "doings" at that time. After the business meeting Henry Howard gave a very interesting account of his experiences during the summer of 1907, as manager for the Eastern Yacht Club, in German and Spanish yachting circles. The lecture was fully illustrated by lantern slides, and gave a vivid picture, not only of the nautical side of the trip, but of the unusual social features enjoyed by the party as well.—Rev. Charles E. Beals is now located in Stoughton, Mass.—F. W. Ranno is in Utah, and his address is 510 First National Bank Building, Ogden, Utah.—W. S. Johnson was elected chairman of the Sanitary Section of the Boston Society of Civil Engineers, at the annual meeting of the Section.—G. C. Whipple was recently elected president of the Brooklyn Society of Engineers.—At a recent meeting of the Brookline Education Society, W. H. Kilham gave an illustrated address upon "Municipal Improvement," especially with reference to the future needs of Brookline.—The following extract is from the *Transcript* of recent date:—

Samuel H. Mildram, of Dorchester, chairman of the Committee on Taxation, is one of the house leaders who accomplishes a great deal without fuss and feathers. Although a young man, his counsel can always be depended on to be sound and able. He is not one of the chronic orators. When he speaks, it is pithily and pungently. He never wastes time. An M. I. T. graduate, he has made a specialty of taxation problems and has served on that committee only, both last year and this, and on the Recess Committee as well. He is known as one who does things, and there isn't any doubt that he is booked for higher political honors.

1891.

HOWARD C. FORBES, *Sec.*, 88 Broad Street, Boston, Mass.

The following is reported by the American Society of Mechanical Engineers: "The American Society of Mechanical Engineers, with the desire to still further develop their publications, have been fortunate in securing Mr. Lester G. French to direct their editorial department. Among the immediate improvements to be undertaken is the establishing of departments in the monthly Proceedings, thus providing a greater variety of technical articles of interest. Many other features are planned, and the aim will be to make the Proceedings of such value that no engineer can afford to be without them. All such papers, however, will first be presented and discussed before the society at its meetings, as formerly, thus benefiting the membership twofold. Mr. French was born in Keene, N.H., in 1869, and very early commenced his training in editorial work and printing at Brattleboro, Vt., his father having been the publisher for a very long time of the Vermont *Phœnix*, and a partner in a large printing establishment in that same place. In 1891 Mr. French received his degree in mechanical engineering from the Massachusetts Institute of Technology. After four years' apprenticeship, draughting-room, and shop experience, principally at the Builders' Iron Foundry shops in Providence, and a year and a half as a text-book writer, Mr. French was engaged on the editorial staff of *Machinery*, and assisted greatly in the development of that paper, and for nine years was its editor-in-chief. Recently Mr. French re-engaged in the publishing of text-books on Algebra, Applied Mechanics, and of a treatise on Steam Turbines."

1892.

PROF. WILLIAM A. JOHNSTON, *Sec.*, Mass. Inst. of Tech., Boston.

Charles F. Park attended the annual convention of the Society for the Promotion of Industrial Education held in Chicago in Feb-

ruary. He prepared an exhibit of the work done by the Lowell Institute School for Industrial Foremen, of which he is director. A large number of excellent photographs of the Institute buildings and laboratories and neostyle sheets showing the type of problems, in addition to the students' work, were included in the portfolio. A study of the work done by other institutions, as shown by their exhibits, conclusively proves that done by the Lowell Institute to be of the highest grade.—Charles F. Wallace was taken suddenly ill February 2, and it was necessary to perform an operation for appendicitis the following day. The operation was successful, and he is now rapidly improving.—John A. Curtin was re-elected selectman of the town of Brookline at the March meeting.—Leonard Metcalf has been doing some valuable work for the Finance Commission of the city of Boston.—Dwight P. Robinson, president of the Stone & Webster Engineering Corporation, was elected a member of the board of trustees of the Stone & Webster Employees' Investment Association at the annual meeting of the board held in January.

1893.

FREDERICK H. FAY, *Sec.*, 60 City Hall, Boston, Mass.

The quindecennial celebration of the class will be held on Monday and Tuesday, June 8 and 9, when for two days those members who are fortunate enough to attend will be lost to the world in one of the most delightful spots in New England. The programme as arranged by the committee in charge provides for an event which one cannot afford to miss. This item will serve as a reminder of the date, but the "real thing" will be described in notices to be sent out at the proper time.—No pleasanter informal class dinner has been held than that of March 14 at the Boston City Club, when Walter T. Peck was given a fitting welcome home from his five years' exile on the west coast of South America. In 1902, after a ten years' connection with the General Electric Company, principally in their power, mining, and foreign departments, which

included three years in Mexico, Peck went to Valparaiso, Chile, as engineer for W. R. Grace & Co., the agents of the General Electric Company for Chile, Bolivia, and Peru. At the completion of his five years' contract with this firm Peck started in on his own account as a consulting and contracting engineer and manufacturers' selling agent for machinery and supplies, and last December he returned to the States to perfect business arrangements with manufacturers here. He is also commissioned by the government of Chile to make a comparative study of railroads operated by steam and roads operated by electricity in this country. It is understood that the Chilean government is considering the feasibility of replacing the second section of the State railroads which are operated by steam by an electrical service. The present cost of operating the government roads is very heavy, as nearly all the coal used is imported from England. The Cordilleras Mountains, with their regions of perpetual snow, furnish numerous streams that are crossed by the second section of the railroad, and which, with their ample falls, seem to furnish excellent opportunities for unlimited water power. The first section, which is about one hundred miles in length, connects Valparaiso with Santiago, and the second section is about three hundred and fifty miles long, and extends from Santiago to Concepcion. Unfortunately, Peck's stay in "God's country" will be short, and he expects to be headed for South America again before the fifteenth anniversary celebration in June. In addition to Peck there were present at the informal dinner Baxter, Bemis, Crosby, N. P. Cutler, Fay, Glidden, Morss, Pickert, and Taintor.—Orton W. Albee underwent an operation for appendicitis early in March, from which he is slowly recovering. He is convalescing at his old home in Marlboro, Mass., where the operation was performed. Albee is located in New York, as a consulting engineer in mining work, and he lives at East Orange, N.J.—Francis DuPont Balch, Jr., infant son of Gertrude Leavitt and Francis DuPont Balch, died at Flushing, N.Y., on Feb. 13, 1908.—Jesse B. Baxter is chairman of the board of selectmen of Milton, Mass., of which body he has been a member for four years. He is also chairman of the Republican Town Committee of that

town. Baxter is paymaster for Walter Baker & Co., Limited, the chocolate manufacturers of Boston and Milton.—Leighton Calkins may fairly be called an enthusiast on golf. He is president of the Plainfield (N.J.) Country Club, president of the New Jersey State Golf Association, secretary of the Metropolitan Golf Association, and a member of the executive committee of the United States Golf Association and a member, also, of its Committee on Rules. He has written articles and pamphlets relating to the game. When not playing golf, Calkins is practising law at 25 Broad Street, New York. His home is at Plainfield, N.J.—The address of Harry L. Clapp is 1431 Marquette Building, Chicago, Ill.—William W. Crosby is a member of the school committee of Woburn, Mass.—Philip B. Day, after spending some years in stock raising at Glasgow (Rockbridge County), Va., has moved to Chicago, and become connected with the automobile department of Studebaker Brothers of that city.—Charles L. Norton, associate professor of heat measurements at the Institute, has recently been carrying on some interesting work in the development of commercial apparatus for testing the thermal efficiency of fuels and in the invention of a new substance known as fireproof wood. Concerning the former the following item appeared in the Boston *Evening Transcript* of March 20, 1908:—

To the development of calorimetric apparatus for the testing of fuels for thermal efficiency Professor Charles L. Norton, of the heat laboratory at the Massachusetts Institute of Technology, has devoted of late much of his energies. The procedure which is coming rapidly into use in all municipalities and is urged by the government engineers, which purposes the specification of the fuel not by name or grade, but by its calorimetric efficiency, has emphasized the necessity for accurate and easily operated apparatus for the determination of the heat of combustion of fuel. Bombs, tightly made, of various sizes and shapes, have been tried, until now there has been developed a fairly standard bomb, about which much is known in the way of radiation and "cooling corrections."

The Tech of March 18, 1908, contained the following account of the new fireproof wood:—

Professor Charles L. Norton, of the Physics Heat Department, has invented a fireproof wood that may revolutionize modern construction. This wood is made from short-fibre asbestos.

For a long time there has been mined in the Province of Quebec the mineral asbestos. This has been used for making asbestos paper, cloth, and a great many articles, such as packings for steam engines, gaskets, and, in fact, has been used wherever a flexible or fibrous material was wanted which was not inflammable and resisted the action of heat. In getting out of the ground and preparing for market the longer fibres, there has been hitherto large waste and a great accumulation of short fibre, so that the "dumps," as they are called, from the asbestos mines extend over great areas and have become a great nuisance and expense.

This condition of things came to the attention of Professor C. L. Norton, of the Physical Department of the Institute, while attempting to make a fireproof substitute for wood; and he succeeded in making from this very short or refuse asbestos a substance which has been called "asbestos wood."

It possesses the properties of wood to a certain extent, for instance, in that it may be sawed, planed, and drilled with the same tools and with the same speed with which hard wood can be worked; and, since it is very largely asbestos, it has been given the name of "asbestos wood."

As to its physical properties, it is gray in color, weighs from fifty to seventy-five per cent. more than the softer woods, but not much more than oak, and about one-half as much as slate, the weight of an inch board 12 x 12 inches being about eight pounds.

Its fibre strength under transverse loads is about three-fifths that of white pine, but the "asbestos wood," having no knots or shakes, and having also the same strength in both directions, there being no grain, has for many purposes quite as effective a strength as ordinary wood.

When exposed to high temperatures, it does not burn, but loses a portion of its strength. It warps slightly if unequally heated, until temperature well above red heat is reached. At these high temperatures its strength becomes markedly less.

At present the material is being made and sold in sheets 36 x 48 inches and in thickness varying from one-quarter to two and one-half inches. Doors, window frames, sheathing, floors, and similar portions of structures have been made successfully of the "asbestos wood," which is nailed and screwed and painted or varnished, if one so wishes, just like ordinary wood.

The "asbestos wood," being somewhat absorbent of moisture, does not serve well as an electrical insulator unless it be further treated with an

insulating medium. As a result of such treatment, there is made what is known as ebony and oak "asbestos wood." These are used as substitutes for slate and marble, and are capable of withstanding high voltages, as, for instance, those one-half to an inch in thickness will not break down at voltages less than fifty or seventy-five thousand volts.

It seems to be resistant to the action of water. Its insulation resistance is distinctly above that of slate, even when dry, and equal to the blue Vermont marble which is so much used for electrical purposes. The ebony and oak are much stronger than the plain "asbestos wood," are harder to work, and are heavier and are more expensive than the plain wood, but easier to work than slate or marble.

—The address of J. Ramsey Speer is Midland Steel Company, Pittsburg, Pa.—Waller Redd Staples, lawyer, of Roanoke, Va., has recently been elected by the legislature of Virginia judge of the corporation court of Roanoke for the term of eight years, beginning Feb. 1, 1909. From 1892 to 1894 Staples was engaged upon canal work under the Engineer Corps, U.S.A. For the next five years he held the position of inspector of public surveys in the Department of the Interior at Washington, during which time he studied law at the National University, receiving his B.L. degree therefrom in 1899. Since then he has practised law; but he is not wholly out of touch with engineers, as he is a member of the Association of Engineers of Virginia, as well as the State Bar Associations of Virginia and West Virginia.—William Alfred Tucker and Miss George Anna Edwards Paine, daughter of Mr. and Mrs. Philip Henry Paine, were married at Lake Linden, Mich., Feb. 26, 1908. Mr. and Mrs. Tucker will reside at Ponkapoag (Canton), Mass., where they will receive their friends on Thursdays in May.— William C. Whiston has returned to electrical engineering again after five years spent in newspaper work. He has a position in the electrical engineering department of the Public Service Commission for the First District of the State of New York. This department was organized a few months ago by the provisional appointment of six electrical engineers, among them Whiston. Later they took a civil service examination, which Whiston passed with good standing, so that his position under civil service is now assured. Whiston's

address is 625 West 135th Street, New York City. He writes that he expects to be with the class at the celebration in June.

1895.

H. K. BARROWS, *Acting Sec.*, 6 Beacon Street, Boston.

Changes of address are reported as follows: James H. Wright, 8 Beacon Street, Boston, Mass.; L. Frederick Howard, 203 Elm Street, Edgewood Park, Pa.; F. T. Miller, 114 Federal Street, Boston, Mass.; Robert D. Farquhar, Security Building, 510 South Spring Street, Los Angeles, Cal.; M. Le Bosquet, 606 West 69th Street, Chicago, Ill.; E. D. Barry, 524 Frick Building, Pittsburg, Pa.; Fred W. Draper, Duquesne Mining & Red. Company, Duquesne, Ariz.; A. S. Coburn, 8756 Buffalo Avenue, South Chicago, Ill.; George L. Bixby, 3010 Kenwood Avenue, Indianapolis, Ind.— It is with deep regret that the secretary has to record the death of one of our classmates, Sumner H. Foster, who, although at the Institute for only a short time, has always been active and enthusiastic in class matters. The following account of Mr. Foster's life and many activities has been furnished by one of his classmates:—

SUMNER HATHERLY FOSTER

Sumner Hatherly Foster was born in Boston, Mass., Nov. 5, 1873, and died during his thirty-fifth year in Brookline, Feb. 8, 1908. He succumbed to an attack of typhoid fever after a short illness.

He attended the Brookline High School, from which he graduated in 1891. He entered the Massachusetts Institute of Technology with the class of '95, but at the end of one year entered the Harvard Law School, from which he graduated in 1895. During the time he was at Technology he took a very active part in class affairs, being vice-president of his class, sergeant-major of the '95 Battalion, and a member of the M. I. T. Athletic Club. At Harvard he took special interest in debating, being a member of the Harvard Union.

He was admitted to the Suffolk Bar in 1895, and for some time was employed by the firm of Carver & Blodgett. He later associated himself

with Mr. Benner as the firm of Benner & Foster; but in the spring of 1907 he gave up his law business to accept a position with Paine, Webber & Co., of which firm his younger brother, Herbert I. Foster, is a partner.

He always took an active part in the public affairs of Brookline, having been chairman of the Brookline Republican Town Committee for two years. In 1904 he was elected one of the county commissioners of Norfolk County, and in 1906 was elected chairman of the board. He engaged in charitable and philanthropic work, and served as an officer of the Second Church in Boston (Unitarian), the Benevolent Fraternity of Churches, and the Morgan Memorial.

Perhaps he was most widely known as a yachtsman. He became a member of the Corinthian Yacht Club of Marblehead, May 16, 1898, and of the Boston Yacht Club, June 30, 1900. In the latter club he was prominently identified with the Marblehead Station, which he was instrumental in establishing, and in the management of which he took a leading part. He had much to do with the consolidation of the various yacht clubs which became a part of the present Boston Yacht Club. He served on many committees of the Boston Yacht Club, and was vice-president of the Yacht Racing Association of Massachusetts. In racing he was always identified with restricted classes, building in five consecutive years, "Opitsah" I., II., III., IV., and V., for various classes. He was one of the prime movers in forming the 22-foot restricted class, which for four seasons was the best racing class in Massachusetts Bay. He won the championship in this class with "Opitsah V." in 1903, and in 1905 and 1906 sailed the champion "Tyro" for Mr. William H. Joyce, making the most remarkable racing record ever made by a boat in Massachusetts Bay. In 1907 he owned, with Mr. Joyce, the Sonder boat "Marblehead," which was one of the three selected to represent the Eastern Yacht Club at Kiel and in Spain. He spent the summer racing at these places and travelling in Europe. He was a member of the Boston Athletic Club and other organizations.

He was buried February 11 from the Second Church, Boston, and the presence of a large number of friends, fraternity men, yachtsmen, business men, and representatives from many organizations, attested to the wide acquaintance he had and the great esteem in which he was held by those who knew him.

—A class meeting and dinner was held at the Technology Club on the evening of Feb. 4, 1908, there being present J. W. Cooke, Dean,

Eveleth, Hall, Hanna, Jackson, Jones, Lawrence, Miller, Tillinghast, and Barrows, with President F. A. Bourne in the chair. It was voted to authorize the secretary-treasurer to pay to the Association of Class Secretaries the sum of $27.20 in accordance with their action and recommendation of Nov. 15, 1904. A report was received regarding the '95 panels for the Huntington Hall frieze, by the committee, F. A. Bourne, who stated that the work was under way. The committee was enlarged by the president appointing Messrs. Hurd, Hanna, and Eveleth to serve as additional members. It was voted that a committee of three be appointed by the chair to report at the June meeting upon the revision of the class constitution and by-laws; and Hall, Tillinghast, and Barrows were accordingly appointed members of this committee. It was voted that a committee of three be appointed by the chair to collect trophies and mementos for a "'95 collection" for the trophy room. The committee appointed was Tillinghast, Jackson, and Jones. The committee of three to nominate class officers for the June meeting was appointed by the chair as follows: A. D. Fuller, E. H. Clapp, and W. H. Drisko.

1897.

JOHN A. COLLINS, Jr., *Sec.*, 67 Thorndike Street, Lawrence, Mass.

Herbert P. Beers announces his engagement to Miss Emily C. Stansbury, of Cleveland, Ohio. Mr. Beers is a member of the firm of Beers & Beers, architects, in Chicago.—C. H. Eames, principal of the Lowell Textile School, was made a member of the Executive Committee of the Technology Club of the Merrimack Valley at the annual meeting held in February. Six '97 men are on its membership list.—H. F. Sawtelle is an inspector with the Factory Mutual Inspection and Insurance Companies.—James W. Smith, superintendent of the Trenton Iron Company, Trenton, N.J., is on a month's vacation trip, and at the time of writing is journeying through the Panama Canal Zone, and thence on to San Francisco. He will undoubtedly look up all '97 men who may

lie in his path.—Some time ago the secretary called attention in these columns to the fact that the *College World*, a projected magazine for which one Samuel Abbott had solicited five-dollar subscriptions from many Technology men as well as from other college graduates, had not yet made its initial appearance, and he wondered thereat. Only a week ago in a Boston paper he saw a despatch from a university town in Maine, stating that a man of this same name had been arrested for obtaining money for a similar purpose. The secretary thought this might interest a number of '97 men whose signatures he remembers seeing on the lengthy subscription list as shown by the solicitor.—A son, Theodore Winslow Atwood, was born October 13 to Atwood, Course I.—A daughter, Marjorie Louise, was born on March 14, 1908, to Mr. and Mrs. Arthur T. Hopkins, of 182 Upland Road, Cambridge.

1898.

PROF. C.- E. A. WINSLOW, *Sec.*, 157 Walnut Street, Brookline, Mass.

The second informal reunion of the winter was held at the Tech Union on Garrison Street, Friday evening, January 24. The evening was devoted mainly to music and to informal talk. Among those present were M. V. Ayers, Bennink, Major Bigelow, Butcher, Butterworth, Coburn, Coombs, Crowell, Curtis, Danforth, Dawes, Dodd, Godfrey, B. H. Johnson, Morgan, Pease, Perley, Perry, Roberts, Scudder, Stillings, Wadsworth, and W. A. Wilder. The general plans for the June reunion have been laid out as follows: The class dinner will be held at some hotel in Boston (as yet undetermined) on Monday evening, June 8. Tuesday, June 9, will be spent in outdoor sports and games at a Country Club near by, and the survivors will return to Boston for Tech Night at the Pops in the evening. The blank form to be filled up with information for the forthcoming class book has been sent out, and those who have not yet responded are earnestly urged to do so at once. The book goes to press May 1.—Sullivan writes that he is just recovering from an attack of typhoid fever.—F. A. Jones sends a new address,

151 Butt Street, Norfolk, Va.—Ingalls has formed a partnership with Alexander Phillips for the practice of architecture under the firm name of Phillips & Ingalls. Their offices are at 37 West 31st Street, New York.—Butcher, who left the State Board of Health last winter to take a position with Metcalf & Eddy, civil and sanitary engineers, has been doing good work in connection with the investigations of the Boston Finance Commission.—Strickland has returned from Porto Rico, and is now making his headquarters at Bridgeburg, Ontario.—Pratt has recently been chosen president of the Sanitary Section of the Ohio Engineering Society.

—Mr. Howard L. Coburn, Member American Society Mechanical Engineers, is a graduate of the Massachusetts Institute of Technology, with twenty years of active and initiative experience. As a mathematician and designer of concrete-steel construction, we have found no man who so combines a complete grasp of theoretical analysis and practical application.—*Extract from circular of Ambursen Hydraulic Construction Company.*

—Fenner writes, "Everybody on the job, June 8."—Wallace says, "Hope to be at the Decennial, and will try to make good."—A. L. Davis, "Will surely get on for the Decennial, even if it is necessary to sacrifice a few shirts in order to do so."—Staples writes: "Although I seldom see or hear of '98 class men in this section of the country, I am interested in their 'doings,' and shall anxiously await the latest news. Have never been so located as to be able to attend a class reunion, but am in hopes to be present at the Decennial."—R. E. Wilder says: "My business renders it seldom possible for me to declare three or four weeks ahead what I shall then do. Much more uncertain is it what I shall do three months hence. I want to be in Boston with the class of '98 in June. Whether or not, I send my heartiest welcome and wishes for a happy and memorable event. Further, I trust some report may be printed and distributed to those who cannot come, that they may rejoice with those who rejoice far off in the 'Hub.'"

1899.

HERVEY J. SKINNER, *Sec.*, 93 Broad Street, Boston, Mass.

Harry Morse is the proud possessor of a son, Leonard Townsend Morse, who arrived Feb. 18, 1908.—Winslow returned from Detroit in February. He has been doing engineering work on the Michigan Central Tunnels under the Detroit River, but was obliged to give it up on account of the "bends."—Etheredge Walker was in Boston during February.—Haven Sawyer also visited Boston the early part of March. He and Walker will be together during the coming summer at Idaho City, Placerville, and Centreville, near Boisé, Ida.—Harry Johnson has returned to this vicinity, and is with the Boston Woven Hose and Rubber Company.—Harry Babcock called on many of his friends in February. He is located at Neenah, Wis.—Frank F. Fowle recently opened an office at Marquette Building, 204 Dearborn Street, Chicago, as consulting electrical and telephone engineer.—A little daughter was welcomed into the home of the secretary, March 8, 1908. She bears the name Flora Elliot Skinner.—The following changes in addresses have been received: W. W. Bonns, Forcing Houses, Cornell University, Ithaca, N.Y.; W. T. Cannon, care of Steptoe Valley S. & M. Co., Ely, Nev.; G. M. Gale, 277 Main Street, Buffalo, N.Y.; Herbert C. Greer, Box 449, Morgantown, W. Va.; Professor F. E. Hermanns, Chinese Imperial University, Tientsin, China; J. P. Jackson, 515 W. Franklin Avenue, Minneapolis, Minn.; C. M. Lewis, 317 Pacific Block, Seattle, Wash.; Professor C. S. Milliken, Gould Cottage No. 3, Tucson, Ariz.; W. R. Parker, 41 Falmouth Street, Portland, Me.; C. W. Swift, 116 Dover Street, Brockton, Mass.

1900.

H. E. OSGOOD, *Sec.*, Room F, Chamber of Commerce, Boston.

S. B. Elbert, who has been working as shift boss in the magnetic plant of the Tomboy Gold Mines Company, met with a serious accident, getting his right forearm drawn through some spur gears,

and crushing the ulna very badly, besides destroying some of his finger muscles. He is now recuperating in the hospital at Telluride, and they hope he will not only save his arm, but also most of the finger motions of his right hand.—A communication has been received from Thomas D. Perry, who is now secretary and business manager of the Board of Education of Grand Rapids, Mich. He informs us that at the banquet of the North-western Alumni Association, held in Chicago, Saturday, February 29, there was a large representation of 1900 men, among them being Paul Brooks, A. G. A. Schmidt, C. A. Bacon, "Bill" Angus, Leonard Wessen, C. M. Leonard, F. D. Chase, and Tom Nesmith. Any information relative to the doings or misdoings of 1900 men will always prove of interest to some one, and the secretary would urge each and every member of the class to write him occasionally, giving him information which will be serviceable for class news, and in so doing an active interest in class affairs and in each other will be developed.

From the Boston *Transcript* of March 6, 1908:—

Lewis Stewart, son of the late Judge John H. Stewart, of Trenton, N.J., has died at his home at Newark, N.J., from typhoid fever, after an illness of about two weeks, in his thirty-third year. He attended the Model School in Trenton, afterward going to Lawrenceville. He worked in an architect's office in Philadelphia for two years, and later was graduated from the Massachusetts Institute of Technology. He then spent a year and a half in study, and after three years at the Beaux-Arts in Paris, studying architecture, took up his profession in New York, and was associated with various architects. On Oct. 12, 1906, Mr. Stewart married Miss Martha Nye Jackson, who, with their infant daughter, survives him. Mr. Stewart was a member of the Episcopal Church, and belonged to the Delta Psi Fraternity, the St. Anthony Club, and the Beaux-Arts Society.

1901.

R. L. WILLIAMS, *Sec.*, 30 Waban Hill Road, Chestnut Hill, Mass.

Since the last number of the REVIEW I have received several letters in response to my plea for letters from the fellows. They

are extremely interesting, and I wish more would write to me. Now that we are scattered all over the globe, we must depend on the mail to keep us in touch with each other. Once more let me urge you to write and at once.—Ellis F. Lawrence writes from Portland, Ore., and says he wishes all the boys could see the West to like it, that it is the place to do things. He also mentions the First Annual Exhibition of the Portland Architectural Club, the object being to start a coast League of Architects. He is chairman of the Exhibition Committee.—Ralph Loring was recently married in Boisé City, Ida. The secretary has not been informed of the name of the fortunate young lady as yet.—In an entertaining letter from Chicago, L. E. Williams writes as follows: "My principal joys consist of a wife and two girls, while my sorrows are caused mostly by financial stringency (personal) and the troubles to be found in contract work varying from straight dredging and docking to caisson foundations, wrecking, concrete foundations, under water and otherwise, and other things of a similar nature." By the heading of his letter I see he is working for the Great Lakes Dredge & Dock Company.—I met George T. Wilson on the street a few days ago, and learned for the first time that he is married and has a son nearly three years old. He is selling roofing materials for a Boston concern.—N. Loring Danforth writes in part: "I have been located in Buffalo, as you probably know, since graduation, in business with my father, the John W. Danforth Company. Last fall we secured a large government contract for a new power plant and hot water distributing system for the United States Soldiers' Home in Washington. The job runs about $200,000 and will take a year to complete, so I am living in Washington this winter. We have a family, fine little girl, first birthday next month. Allen Pope, '07, is with me as assistant engineer, and Frank S. Lane, '02, is assistant engineer at Buffalo. So you see I believe in Tech men. If any of the boys happen to be in this vicinity, we certainly would be glad to see them." The secretary received Danforth's letter a few days after returning home from Washington, where he had been on a short trip, and was very sorry he had not received it sooner.—C. G. Tufts is to be congratulated,

as you will see by the following extract from a letter received from him: "I am just celebrating the advent of Laurence Turnbull Tufts, who passed his 'prelims' with flying colors on December 29. He certainly is a fine boy, named after his mother, and assays 2,000 lbs. high-grade metals to the ton. I am still with headquarters in Chicago, where I have been practically for the last year continuously. So far there does not seem to be any depression in business in this section at all, at least in my own end of it. It is still a case of twenty-four hours a day, three hundred and sixty-five days in the year, and still not time enough to do all we would like to."—The following changes in address have been received: S. D. Atwood, 90 West Street, New York, N.Y.; S. L. Wonson, Mexican Railway, Mexico City, Mex.; W. T. Sturtevant, Everett Light and Water Company, Everett, Wash.; G. T. Hyde, 14 Ottawa Bank Building, Montreal Can.; W. T. Aldrich, West 44th Street, New York, N.Y.; Richard B. Derby, 20 Beacon Street, Boston, Mass.; Charles E. Martin, 27 Hewins Street, Dorchester Centre, Mass.; A. W. Peters, L. N. Fornum Company, Dummer, Vt.; Edward Seaver, Jr., 652 Maryland Avenue, E. Pittsburg, Pa.; J. M. Perkins, 10 Astor Street, Lowell, Mass.; Harry E. Dart, 106 Park Street, Hartford, Conn.; S. C. Sears, University Club, Mexico D. F., Mex.; Professor Albert C. Dart, University of Wyoming, Laramie, Wyo.

1902.

F. H. HUNTER, *Sec.*, 75 Park Street, West Roxbury, Mass.

Since the last report in the REVIEW the class has been fairly active. On the 27th of February an informal dinner was held at the Tech Union, with thirty-one men present. After the dinner there were sketches and monologues by two vaudeville artists, and much good-fellowship and song. The piano was much depressed during the course of the evening, chiefly by "Polly" Chalifoux and Charlie Mixter. The following men turned out: Ames, Boardman, Chalifoux, Collier, Dickson, Everett, Finneran, Fisher, Fitch, "Steve"

Gardner, Greeley, Hadcock, Hall, Hooker, Hunter, Magrane, Mardick, Millar, Mitchell, Charley and Jason Mixter, Nickerson, Patch, Ritchie, Robinson, Adrian Sawyer, Shedd, Stillings, Wemyss, R. F. Whitney, Whittet, and "Doc." Williams. During the evening letters were signed by all present, conveying greetings to the classmates who should attend the dinners of the Technology Club of New York and the North-western Association at Chicago. These were then mailed so as to reach our vice-presidents, Place and Lockett respectively, before the dinners, both of which took place on the 29th. From Chicago return greetings were sent by Sturtevant, Foote, Waterman, L. E. Williams, Pendergast, and Lockett, who represented '02 at the North-western Association Banquet. At the New York dinner our letter was read to the entire company by the toastmaster, as an example of fraternal spirit. At this dinner '02 was much in evidence, and led off in the cheering, under the lead of Vice-President Place.—The second dinner of 1902 to be held in New York took place at the Hotel Brevoort on March 28, and those present spent a most enjoyable evening. C. B. Allen, Annett, Ned Baker, Davis, D. R. Franklin, Mather, Joseph Philbrick, "Dick" Reed, Grant Taylor, and Place were on hand. The success of this dinner, with a better attendance than last year, promises that it will be repeated at least annually.—On the 1st of this year our class president, Adrian Sawyer, branched out as manager of the C. A. Sawyer, Jr., Company, general contractors for foundations and all kinds of earth work. F. K. Mitchell is associated with him as an officer of the company. The concern has offices in the Old South Building, Boston.—Since the last issue of the REVIEW we have lost one of the loyal members of the class, Walter Robie Morrill, who died at his father's home in Amesbury, Mass., on Dec. 17, 1907. Up to his final illness, which followed upon several months of poor health, Morrill was electrical engineer with the Electric Storage Battery Company of Boston.—The much-promised appearance of the Class Record promises to become a fact before long, as at the time of this writing the secretary is receiving "galley" proof. Explanations and much Class News are withheld, to come out in

this book.—Everett Lyman Upham and Miss Mary Bundy were married on Saturday, Oct. 12, 1907, at Foxboro, Mass.

1903.

WALTER H. ADAMS, *Sec.*, Polytechnic Institute, Brooklyn, N.Y.

The new constitution has been adopted, and the mail elections have been held. The results of the elections are as follows: Olmsted, secretary; Nutter, assistant secretary; W. H. Adams, Newman, and Swett, advisory board. Considerable information has been gathered from the information blanks that were sent out at the beginning of the year. Bates was married to Miss Clarinda Hager on Dec. 10, 1907.—Cole was married to Miss Georgina McSweeney on Sept. 25, 1907.—S. G. Porter was married to Miss Ethel Oliphint, of Waco, Tex., on June 18, 1907.—John S. Bridges, Jr., reports the arrival of John S. Bridges, 3d, on July 26, 1907.—Lochridge has two girls, Mary Louise, born July 6, 1905, and Dorothy, born Jan. 2, 1907.—Loughlin has a daughter, Beryl Frances, born Dec. 19, 1907.—Joyce writes that his engagement to Miss Ruth Conant, of Boston, was announced on Jan. 18, 1908.—A. H. Eustis writes that he is in charge of the Eustis Mining Company's plant at Eustis, Quebec, and spends most of his time there.—Ferry has travelled since leaving Tech. His work has taken him to New York, Chicago, Quincy, Ill., Belvidere, Ill., New Brunswick, and San Francisco, Cal.—Morse writes from La Mesa, Mont.: "Thruout the past year, labor conditions have been so poor as to affect materially the cost of construction work. Not only because of high wages paid, but because of very low efficiency of class of labor found here. Now labor is plentiful and of a better class. Wages for ordinary labor were 27½ cents per hour, now reduced to 20 cents." He is assistant engineer United States Reclamation Service on Lower Yellowstone Project.—Tolman writes that he is instructor in theoretical chemistry, Dalton Fellow, and candidate for the degree of Doctor of Philosophy at M. I. T.—The following changes of address and occupation have

been received: Aldrich is a member of the firm Gray, Aldrich & Co., 7 and 8 Commercial Wharf, Boston, Mass., dealers in gas engines and sundries.—Bates, Port Arthur, Ontario, Box 243, is assistant engineer on the Canadian Pacific Railroad, in charge of the reconstruction of elevator D.—Buhler, 27 Newbury Street, Boston. —Cole is a mechanical engineer with the American Radiator Company, Detroit, Mich.—Foster is superintendent of the gas department of the Union Light, Heat, and Power Company of Covington, Ky.—Hamilton has resigned from the Marine Corps, and is studying to take the examination for patent examiner. His address is 515 W. 124th Street, New York.—Harlow is boiler-room engineer with the United Railway and Electric Company of Baltimore, Md.—Howell is sub-inspector at the navy yard, Pensacola, Fla.— Jackson, 30 Windes Street, Detroit, Mich., is architectural draughtsman and superintendent with G. H. Ingraham in his Detroit office. —Lang, Bay State Building, Lawrence, Mass., is a contractor and builder.—Lyon, 320 High Street, Pawtucket, R.I.—Millard, care of Riter-Conley Manufacturing Company, Pittsburg, Pa., is engineer on construction.—Mulherin, 1810 Chestnut Street, Philadelphia, Pa., is in charge of the estimating department of the Vulcanite Paving Company.—Newman, 14 Beacon Street, Boston, is assistant engineer with William Wheeler.—Pulsifer, Riddle, Ore., is mine superintendent.—Regan, 49 Winchester Street, Boston, is teacher of science and mathematics in the Charlestown High School.

1904.

R. A. Wentworth, *Sec.*, Saylesville, R.I.

M. L. Emerson, *Res. Sec.*, 161 Devonshire Street, Boston, Mass.

On March 5 the secretary emitted a circular letter which was sent—to the best of his knowledge and belief—to every man who ever belonged to '04. It was in the standard form of secretarial proclamations, a prominent feature being a request for dues. If any '04 man did not receive this letter, probably his latest address is not on the secretary's books. I should like to be notified of any

such case.—There was a 1904 dinner at the Technology Club on Thursday evening, March 19. Charlie Homer had promised to be toastmaster, but through a slight illness was unable to be present. The following men were out: Elliot, Ferry, Galusha, Haley, Gerry, Haraden, Hartshorne, Haynes, Hayward, Parker, Rockwood, Stebbins, Stevens, P. S. Sweetser, Tripp, and Wentworth. I. W. Litchfield, '85, was guest of the class. He reviewed the recent development of the Institute, dwelling particularly on graduate interests and matters toward which the graduate organizations are working. Later we discussed means of arousing enthusiasm of 1904 men, also the disposition of class funds. Thanks were extended to Haynes and Holmes, who ran this dinner. It was decided to hold another dinner at the Technology Club on Friday evening, May 1. We renewed our acquaintance with the old Tech songs, and learned some of the new ones.—There were nine 1904 men at the Alumni Association annual dinner.—I have received notice of the wedding on April 2 of Miss Constance Henrietta Richardson to William Arthur Kemper at Newtonville, Mass. I understand that the ushers were all Tech men and that M. L. Emerson was best man.—E. R. Crane, E. A. Holbrook, and C. B. Cox are charter members of the newly organized Technology Society of the Pacific North-west, Crane being secretary.—Carl King writes that he is still with the American Steel and Wire Company at Worcester, Mass., and enjoying his work. He was married last June to Miss Emily Beekman Dunning, of Brookline.—In a recent number of the *Physical Review* appeared an article by Professor Goodwin and R. D. Mailey on "The Electrical Conductivity, Viscosity, and Density of Fused Salts." The same magazine will soon print two papers by Professor Goodwin and H. T. Kalmus. Kalmus has had two articles in the *Zeitschrift für Physikalische Chemie*, one on "The Fluidity of Fused Salts" and one on "The Electrical Conductivity of Fused Salts," the latter being written with Professor Lorenz. Comstock's article on "The Relation of Mass to Energy" appeared in the *Philosophical Magazine* for January, 1908, and he has another on "The Indestructibility of Matter" to come out in March. Mailey, Comstock, and Kalmus all expect

to continue at the Institute next year.—Ovington is making money, as usual. He has gotten away from his old hobby of high-tension electrical work far enough to handle the North American agency for the F. N. Motor Cycle, the only four-cylinder motor cycle sold in America. He has a big place at 80th Street and Broadway, New York.—P. M. Paine is in the Forest Service of the Department of Agriculture, and is now in Washington, D.C.—George Powell is in the custom-house at Baltimore.—On February 5, George Alden Curtis was married to Miss Mary Folger Simmons, daughter of Mr. and Mrs. John Franklin Simmons, at Assinippi, Mass. Charlie Haynes was best man. Looking across a Providence theatre the other night, I saw Cap. Curtis and his wife in a box. Near the end of the show I got out to see them, but they, too, went out early, and escaped in the crowd. On the outside I hear that Cap. is working (with) the Massachusetts Highway Commission, and living at Assinippi. He probably will be located near Pittsfield, Mass., after State road construction work opens in the spring.—The wedding of Fred Pierce and Miss Turner, of Campello, Mass., which was prophesied in the last REVIEW, occurred as per schedule, and was extensively reported in the local papers. The wedding trip included Niagara.—The engagement is announced of Miss Helen Chase Bailey, of Brookline, to Edwin Francis Allbright. Allbright is in Washington with the bridge department of the Southern Railroad, and is making a name for himself. He was in Boston around Christmas time. He had recently had the pleasure of checking over some Phœnix Bridge Company's drawings made by Earl Cunningham.—Goddard was married in November, 1906, to Miss Helen Cochrane, of Pittsburg, Pa. They have a daughter, Miss Lois Cochrane Goddard. Goddard has gone into business for himself, and is located on the top floor of the Board of Trade Building, Boston. He is in the Concrete Steel and Tile Construction Company.—Severy was in Boston recently, having been spending the winter at his home at Chase's Mills, Me. He has been with the Illinois Central Railroad, in charge of fire protection work. He has spent most of his time since graduation in travelling over their system.—Mert Emerson's latest card reads "Operating Manager, American Pneu-

matic Service Co." He gets out to St. Louis, Chicago, and Cincinnati about every two months.—Willard has electioneered himself into the office of secretary of the Washington Society of the M. I. T. He says that three out of the four officers of that society are '04 men, but doesn't tell who they are. Maybe he saved that information for his own letter to the REVIEW. Any '04 man visiting Washington ought to look up Willard at the George Washington University, and get in touch with the fellows in that city.—Willard writes: "Maurice Weaver (VI.) passed a most successful examination for assistant examiner in the Patent Office, highest in the set, I believe. After hours he runs a four-cylinder Franklin like a musical symphony. E. T. Wood (II.) the fat one, is buried or in love out in Steubenville. Kramer (I.) and Pirie (II.) are going to follow suit in getting their names into the marriage license column before long. I am getting ready to make some tests on alcohol as fuel in commercial types of gasoline engines, at the George Washington University. Have made the preliminary runs."—That's a good bunch of news. Why don't YOU send me along one like it.—I have had our Pittsburg correspondent following up Wood on this love matter. He reports as follows: "So far as I could make out, Wood has not been entangled seriously; that is, to hear him tell it."—Bill Edgecombe writes: "Am still with the Santa Fé in the Mechanical Department, and spend most of my time in Topeka, Kan."—Miss Rogers has been for some time Mrs. C.-E. A. Winslow, wife of Professor Winslow, of the Institute Biological Department.—Miss Wetherbee is now Mrs. Kenneth Mark, of Huntington Avenue, Boston.—The secretary desires the present addresses of C. D. Knowlton, Alfred L. Coupe, Edward R. Ray, C. G. Crull, G. McI. Proudfoot, and G. W. Francis.—Had a fine letter from J. McF. Baker. He said, "Ain't got no news." Luckily, we have a check on him. His address a year ago was in Paris. Now he writes from New York. Apparently, a trip across the Atlantic is "no news."—Otto Faelten, who was with us for a time, is abroad for two years. Present address, "Travelling."—Rumor has it that Charlie Homer is with a boat concern at Bath, Me. He was a part of their exhibit at the recent Boston Motor

Boat Show, and drew great crowds. Later reports are that he is associated with the city engineer of Quincy, Mass.—W. F. Gerry writes that he is engaged, also that Fred Goldthwait has gone the same way. Gerry is in business with his father at Lynnfield Centre, Mass. They have a large plant, consisting of orchards and mill for making cider and cider vinegar.—Course III. news in the *Tech* reports recent '04 visitors at the 'Stute as follows: "Mose" Brown and A. H. B. Arnold on vacations and R. B. Williams at home after three years' service in Ecuador.—In the *Tech* of March 11 appears the following:—

A PH.D. IN GEO-PHYSICS

DR. SOSMAN GOES TO CARNEGIE INSTITUTION.—USE OF GAS THERMOMETER HIS WORK

Dr. R. B. Sosman, formerly connected with the research laboratory of physical chemistry, who received the doctor's degree from the Institute last June, and who has been for the past year in the office of A. D. Little of this city, has accepted a position at the Geo-Physical Laboratory of the Carnegie Institution in Washington.

This laboratory undertakes investigation of the processes involved in the formation of rocks and minerals; and under the remarkably efficient management of its director, Dr. A. L. Day, an unusually complete equipment has been assembled for the study of chemical equilibria at high temperatures and high pressures.

Dr. Sosman's research will consist in the extension of the use of the gas thermometer to very high temperatures,—a thing of utmost importance for high temperatures.

—At a recent Pittsburg Alumni Association dinner there were A. D. Smith, Hadley, "Eddie" Wood, Cerf, and about fifty other prominent graduates.—Smith owned up to a little Smith about thirty inches high. His address is Coraopolis, Pa.—Hadley is night superintendent of a blast furnace plant for the National Tube Company at McKeesport, Pa.—Bob Faulkner is roaming Germany. Latest advices place him at Munich, where he has been actively engaged in investigating the possibilities of the genuine Münchener Hofbrau.—Since last writing for the REVIEW I have

heard that Frank Davis has left Detroit for the Louisiana Lines of the Southern Pacific Company. His address is "M. L. & T. R.R. & S.S. Co., Lafayette, La." That nearly exhausts the alphabet.

ALFRED PEABODY

Alfred Peabody, born in Salem, Mass., Feb. 5, 1880. Died of typhoid fever in Montserrat, Beverly, Mass., Feb. 27, 1908, aged twenty-eight. Attended Salem schools, and graduated at Massachusetts Institute of Technology in 1904. After graduation he entered the Washington Trust Company, Boston, as a clerk. After two years he resigned to take a needed rest and less confining work. He came home from the South in December, 1906, and entered upon the manufacture of rubber substitutes in Salem, then in Gloucester, where he established his business under the name of the Stirling Manufacturing Company, of which he was head. He was a member of the First Baptist Church, Salem, and secretary of the Sunday-school there. He was also a member of the Bank Officers' Association and the Baptist Social Union.

A course-mate, in writing of Peabody, says: "He was a Course IX. man, a member of the Walker Club (secretary for two years), quiet and unassuming in his ways and a thorough gentleman. He was a man of few friendships, but those who knew him found him a true friend in every sense of the word. A more honorable, upright, and unselfish fellow never lived."

1905.

GROSVENOR D'W. MARCY, *Sec.*, 246 Summer St., Boston, Mass.

The annual midwinter dinner was held at the Crawford House on the evening of February 28. Twenty-six men were present, and had a very enjoyable, although informal, time. By a lucky coincidence several fellows from a distance happened to be in town, and furnished a pleasant surprise by appearing at the dinner. Bill Green was on from Gloversville, N.Y., Bill Gouinlock from Warsaw, N.Y., Hub Kenway from Washington, Andy Fisher from New

York, and Al Prescott from Hartford. Perkins gave the vital statistics which he had tabulated from the replies to the dinner notices. Robbed of the flowers of speech supplied by Perkins, the figures were as follows: total replies received, 157; married, 43, or 36.5 per cent.; children, 17, or one to every ninth member of the class; engaged, and glad of it, 13, or 12 per cent.; "not saying" or soon to be numbered in the last class, 15, or 10.5 per cent. Thus 59 per cent. of the class would appear to uphold the Roosevelt doctrine. Every one had to get up and tell what had happened to him since leaving the 'Stute, and it was very interesting. John Ayer had returned from fifteen months abroad, eight of which were spent in travelling and the rest at the Technische Hochschule at Charlottenburg, which was long enough to convince him that as a place for the average man to get an education it was not in it with the M. I. T. Ayer is now with the Charles River Basin Commission in Boston. Butman had some interesting experiences to relate of a trip to Europe on a cattle boat last summer. He is now an assistant in physics at Tufts College. Hub Kenway related the series of adventures which led to his being in Boston at this time, which included putting his arm through a plate glass door, and later burning the same arm in extinguishing a conflagration which threatened to wipe out the capital city. We all approved of the vacation, but not of going to such lengths to get it. At a recital of the various bills before Congress to increase the salaries of patent examiners, the local contingent fell to considering railroad fares and civil service exams. At the close Al Prescott played some of the old songs for those who still could sing, and late passers on Brattle Street were much entertained thereby. The following cablegram arrived just in good time to explain why some of the fellows were not at the dinner:—

COLON, CANAL ZONE.

TECH DINNER, CRAWFORD HOUSE,
BOSTON, MASS., U.S.A.

Drink — a — stein — for — four — tropical — tramps — sweating — in the—ditch. (Signed)

EICHLER—GAGE—BROWN—FLYNN.

It was drunk with cheers, as were Walter Clark and Piggy Bartlett, not with cheers. The reply post-cards sent with the dinner notices brought items from many fellows not heard from for a long time.—E. Gordon Bill is instructor in mathematics at Yale University, and was married on Aug. 17, 1906.—W. J. Sneeringer is in the cigar leaf tobacco business, and is located at 1317 North Charles Street, Baltimore, Md.—W. C. Pickersgill is assistant engineer, Board of Water Supply of New York City. His headquarters are at White Plains, N.Y.—John H. Morse is director of the Primary Industrial School in Columbus, Ga., and has the record family of three children, all of which were born prior to '05, however.—Henry A. Kirkwood is a civil engineer at Togus, Me.—Herbert W. Olmstead is also assistant engineer, New York Board of Water Supply, located at Valhalla, N.Y., and was married on Oct. 8, 1907, to Miss Clara J. Wagner, of Boston.—The secretary caught a glimpse of John H. McManus, who holds down the same long title as Pickersgill and Olmstead, at West Hurley, N.Y. John was just returning from a short trip home.—Theodore A. Longuemare reports the birth of Alfred Russell Longuemare on Dec. 8, 1907, at Weymouth, Mass.—Ralph E. Tarbett is with the Knoxville Water Company, Knoxville, Tenn., as superintendent of construction and bacteriologist. To show Knoxville's prosperity, he pasted a one-cent stamp over Mr. McKinley's face on the reply post-card.—Robert F. Luce writes that he has been with the United States Coast and Geodetic Survey since graduation, and is now an assistant on the survey steamer "Bache," in charge of a shore party surveying the north coast of Porto Rico.—S. B. Littleton enthuses over the West, and writes from Wenatchee, Wash., "This is the finest country and climate ever, and has opportunity writ large all over it." He is married, and gives his occupation as civil engineer and fruit grower.—W. Allen Staples is engaged in electrical contracting in Fredericton, N.B., and was married April 15, 1907.—Ralph H. Nesmith left the League Island Navy Yard almost two years ago, and since then has been in the engineering department of the American LaFrance Fire Engine Company of Elmira, N.Y.—Fred W. Simonds reports the birth of a daughter,

Doris A. Simonds.—Charles L. Dean seems to be moving around the country. He was reported in Mexico, but sent in his card from Denver, Col., as sales agent with the Buffalo Forge Company. As a news item, he quotes George Jones in the Class Prophecy, "The hand that cradles the Rocks rules the world." We do not know whether Charles has begun to realize the force of this or if the point of the joke has just occurred to him. His trip to Mexico is explained in a prospectus sent out by him and Bob Morse. They have a timber proposition in hand which looks very good in the prospectus, and would be glad to confer with any one interested. Bob's address is 509 La Mutua, Mexico, D.F., and that of Dean, who is looking after the financial end, is 232 Swissvale Avenue, Edgewood Park, Pa.—T. P., or "Chink," Moorehead is engineer with the Ferro-Concrete Construction Company at Seattle, Wash.—M. G. Meriam is in educational work with the Providence (R.I.) Y. M. C. A.—R. K. Clark is a sales agent, and, while travelling in the West, reports making contact with Norman Lombard at Kansas City and Arthur Belding at Joplin, Mo.—Bill Motter writes from Orogrande, New Mexico, that he is (*very*) glad to get back in God's country, and that "you can count on us all making a big splurge to get back to Boston in 1909."—Hallet R. Robbins is employed as assistant engineer examiner for the State Civil Service Commission at Albany, N.Y. He is at present taking a few months' leave of absence for a course in the Royal School of Mines, London, England.—The secretary recently had a letter from Norman Lombard, in which he announced his engagement to Miss Ellen McKeighan, of St. Louis, Mo. Norman's stationery proclaims him as president of the Kansas City Retailers League Company, but the information on his reply card gave his occupation as "Making an honest dollar at anything." He also says: "Have been chosen a delegate to represent the county in the State convention, to name Taft men. Don't seem to be able to keep my fingers out of politics. Am candidate for Republican nomination for legislature." Here's wishing there were more of the same kind of fingers in politics.—George Jones says "Yes" opposite the word "Engaged?" as also does Bill Green, but as to

the name of the young lady the post-card sayeth not in either case. We understand, however, that George goes to Detroit frequently, and remember that Bill used to go to Lowell now and then.—W. N. MacBriar is engaged to Miss Ruth Flather, of Nashua, N.H. Mac is foreman of the machine and pipe repairs department of the Baldwin Locomotive Works in Philadelphia.—H. Louis Jackson is assistant professor of chemistry, University of Kansas, and says he is going to "take the best girl out of Boston some time this summer." We like his nerve, and will watch him do it.—Bill Gouinlock is less positive, and opposite the word "Engaged?" writes, "Don't know." Pop Swain would call you names, Bill, if you said that in Structures.—Harry P. Charlesworth was married to Miss Anne Barnes on Feb. 11, 1908. They are living in Grange, N.J.—Harry Wentworth had a letter from John C. Damon, from Grace, Ida., where Damon seems to be having an interesting and somewhat strenuous time on a large water power development. He says that, owing to the financial stringency, work on everything but the dam was shut down for the winter, and that had to be finished or go out in the spring. He says: "One night when I was engineer, the thermometer went down to 30 below zero. You can see we have much ice and cold to contend with, and keeping engines, pumps, hoists, water and steam lines in operative conditions, is no joke. I have had my clothes get wet and freeze stiff on me many a time, and for three days at a time my clothes haven't dried in my tent at night after getting wet the day before. You can judge my health is good when I say that I am enjoying life under these conditions. Living outdoors in this mountain air has made a wonderful change in me."

KNOW ALL MEN by these presents, James M. Barnes, of Utica, N.Y., party of the first part, since Dec. 31, 1906, having been declared possessor of the title of Class Baby of 1905, and certain murmurs having arisen that nay, it was not so, whereat all parties with prior claims being duly cited to present and substantiate said claims as set forth in the law, NOW, THEREFORE, be it decreed that, said parties having failed to present due proof, said party of the first part—namely, to wit, James M. Barnes—be, and hereby is, irrevo-

cably confirmed in said title to have and to hold, until his twin sister, Milla E. Barnes, be big enough to exact an undivided one-half interest thereof. Any one not satisfied with this can settle it with Jim, Sr.

Frank S. Elliot writes from 313 Broad Street, Lynn, that he has purchased a half-interest in the Perry & Searle Company, printers, and is doing a first-rate business, with good prospects.—The secretary has received cards for the wedding of Miss Charlotte Foster to Mr. Carl Herman Graesser, on April 20, in Roxbury, Mass.—Ned Jewett sends the sad news of the death of his daughter, Margaret, on Oct. 30, 1907. In their loss both Ned and Mrs. Jewett may be sure of the sympathy of the class.

1906.

ANGELO T. HEYWOOD, *Sec.*, Mass. Inst. of Tech., Boston.

A large amount of news, changes of addresses, could not be printed in the January number of the REVIEW on account of lack of space. As much as possible of this is inserted below.

Paramount to all other class news is the election of class officers.

The results of the first annual election of class officers of the class of 1906 under the alumni class constitution adopted June 4, 1907, are as follows:—

Secretary, A. T. Heywood (III.), of Boston. Term expires June 1, 1909.

Assistant secretary, U. J. Nicholas (VI.), of Boston. Term expires June 1, 1909.

Trustees for Permanent Fund, H. C. Henrici (II.), of Sabetha, Kan. Term expires June 1, 1910. M. A. Coe (II.), of Medford. Term expires June 1, 1909. C. L. Anson (XIII.), of Boston. Term expires June 1, 1908.

Directors on the Executive Council, R. R. Patch (I.), of Stoneham. Term expires June 1, 1910. G. C. Simpson (I.), of Boston. Term expires June 1, 1909. H. S. Whiting (VI.), of Roxbury. Term expires June 1, 1908.

"Tempus" is fugiting so rapidly that the Executive Council is quite busy planning and making arrangements for the annual reunion in June, 1908. The strenuous life is also being practised by the secretary, and his work would be greatly lessened if the men would be more prompt in notifying him of change of address. The rapid changes in addresses brings to mind the old adage that "a rolling stone gathers no moss, but it gets pretty smooth"; and, at the rate the fellows have been moving around, we must have the smoothest bunch of fellows in the country.

Owing to the large amount of class news, clippings, marriages, etc., which space prevents being reproduced in the REVIEW, it has been decided to put such items in a large scrap-book, to be kept by the secretary in Room 37, Rogers Building, where it will be accessible to all our classmates. This book is to be officially known as "The Class Diary of 1906."

REUNIONS AND MEETINGS

An informal class dinner was held February 12 at the Technology Club, Boston. At this dinner H. S. Whiting, A. T. Heywood, and C. L. Anson were appointed a committee to organize the Central Branch of 1906 for the purposes indicated in the Constitution, and it was decided to hold the branch dinners at the Technology Club the *first Wednesday* of each month. News was exchanged, letters read, and general good fellowship prevailed.

There are many '06 men located in and near Boston, many others visit the city during the year. The Central Branch has been organized to hold monthly dinners where a fellow may have a chance the year round to meet some of his classmates, learn what is doing at Tech, and, in general, keep in touch with the rest of the men. It is planned to have present at these meetings guests who can tell the fellows of the latest news in the numerous Technology movements and activities, and men who can speak on matters of interest to the fellows in their daily work. There are no dues. Any one wishing to join simply sends in six self-addressed return post-cards to Herbert S. Whiting, 112 Water Street, Boston. These are to be used as reminders shortly before each dinner.

Two meetings have been held. At the first one, in March, Ralph R. Patch was chief announcer. Mr. Curtis C. Webb, '10, business manager of the Tech Show, told of the progress of the Show. Mr. George A. Haynes, '09, of *The Tech*, told of the movement for a new Tech Union and of the plans for Tech day at the Hippodrome (April 10). A block of seventy-five seats was reserved by 1906, and Heywood was appointed a committee to take charge of the sale. The following Publication Committee was appointed by the Branch to assist in editing class notes for the REVIEW: G. F. Hobson, A. T. Heywood, and U. J. Nicholas. R. R. Patch was appointed a committee to look after speakers for the Branch meetings. Plans were made for attending Keith's Theatre on the night of the April dinner.

At the April meeting of the Central Branch about thirty members were present, all of whom adjourned to Keith's after dinner. Mr. Howard L. Coburn, '98, and "Bill" Green, '05, were guests at the theatre.

On Friday, April 10, 1908, comes Tech night at the Hippodrome. The Institute is to receive 25 per cent. of the gate receipts for tickets sold by Tech men prior to March 22. Heywood reports that all the seventy-five seats reserved by our class have been disposed of. Naughty-seven followed suit of '06, and got seventy-five reserved. We understand that total proceeds will amount to $400 or $500, which sum is to be used for fitting up a new Tech Union in Copley Hall.

From Washington, D.C., we hear that Noble and Terrell are getting their heads together over a dinner among the fellows there, to be pulled off soon.

Changes of Address.—Judging from the number of changes of address recorded below, we seem to be making headway as the "smoothest" class in the country. Owing to haste in preparation, the names are not all arranged alphabetically.

D. Adams, 43 Pleasant Street, Methuen, Mass.
S. C. Allen, Genesee Fruit Company, Rochester, N.Y.
J. W. Anderson, 423 Benson Street, Camden, N.J.

M. B. Ashmore, 3 East 25th Street, Minneapolis, Minn.
R. J. Barber, Globe Optical Company, 403 Washington Street, Boston.
H. S. Bailey, 226 11th Street, Washington, D.C.
H. J. Ball, 15 Woodward Avenue, Lowell, Mass.
E. S. Bardwell, c|o Professor Robert H. Richards, M. I. T., Boston, Mass.
H. P. Barnes, Chappaqua, N.Y.
E. B. Bartlett, 420 Jefferson Street, Milwaukee, Wis.
A. L. Bell, Bolivia Ry. Company, La Paz, Bolivia, South America.
Leavitt N. Bent, Independent Powder Company of Missouri, Joplin, Mo.
F. H. Bentley, The Maplewood, c|o American Thread Co., Holyoke, Mass.
L. G. Blodgett, 5 Water Works Building, Kansas City, Mo.
C. F. Breitzke, 71 Lancaster Street, Albany, N.Y.
F. A. Browne, Dept. of Motive Power and Machinery, Culebra, Canal Zone.
W. S. Brown, 55 Kilby Street, Boston, Mass.
W. J. Cady, 245 Greene Avenue, Brooklyn, N.Y.
E. S. Campbell, Carnegie Technical School, Pittsburg, Pa.
W. S. Caypless, 1035 Logan Avenue, Denver, Col.
Anna M. Cederholm, 16 Howe Street, Wellesley, Mass.
Edward Chandler, Parnassus, Pa.
A. M. Chichester, 2321 Madison Square Station, Philadelphia, Pa.
R. S. Clark, 26 Fremont Street, San Francisco, Cal.
William Couper, 52 East 34th Street, New York, N.Y.
Arthur M. Cheney, 53 East 75th Street, Chicago, Ill.
Raymond E. Cranston, 31 Lawn Avenue, Pawtuxet, R.I.
George L. Davenport, Jr., 532 D Street, San Bernardino, Cal.
D. C. Davis, 715 19th Street, N.W., Washington, D.C.
R. P. Davis, 217 Mitchell Street, Ithaca, N.Y.
J. J. Donovan, 130 West 82d Street, New York, N.Y.
David D. Eames, 14 Curtis Place, Auburn, N.Y.
C. F. Edwards, 447 Douglas Building, Los Angeles, Cal.
E. M. Eliot, Technology Chambers, Boston, Mass.
E. B. Evans, Unaka Company, Johnson City, Tenn.
R. D. Farrington, 56 Bellevue Street, W. Roxbury, Mass.
William C. Furer, Department Yards and Docks, United States Navy Yard, New York, N.Y.
H. T. Gammon, 3622 11th Street, N.W., Washington, D.C.
N. P. Gerhard, 260 Clinton Avenue, Kingston, N.Y.
P. K. Griffin, 158 Walnut Street, Neponset, Mass.
G. R. Guernsey, c|o U. S. R. S., Rupert, Ida.

C. E. Hamilton, 276 Endicott Avenue, Dorchester, or Lamson Supply Company, 163 Devonshire Street, Boston.
W. A. Hardy, Room 264, Patent Office, Washington, D.C.
E. E. Harrington, 826 Eighth Avenue, No., Great Falls, Mont.
M. W. Hayward, Williams College, Williamstown, Mass.
R. R. Heuter, 49 Prairie Avenue, Auburndale, Mass.
H. G. Hixon, United Zinc & Chemical Company, Iola, Kan.
T. B. Holmes, Michoacan Ry. & Mining Company, Michoacan, Mex.
C. A. Howard, 214 West 82d Street, New York, N.Y.
Robert Hursh, Empire Zinc Company, Apartado 214, Monterey, N. L., Mexico.
A. H. Keleher, 602 West 137th Street, New York, N.Y.
R. D. Kelley, 1107 Broadway, Logansport, Ind.
B. W. Kendall, M. I. T., Boston, Mass.
P. J. Kennedy, Jr., 564 West 33d Street, New York, N.Y.
William J. Knapp, 600 Rebecca Street, Wilkinsburg, Pa.
H. L. Lewenberg, 142 West 105th Street, Manhattan, N.Y.
Harold Lord, Office of Light-house Engineer, Honolulu, T.H.
Francis H. Kales, Assistant Superintendent United States Light-house Department, Honolulu, T.H.
C. G. Loring, Perier Cie., Rue de Provence, Paris, France.
A. P. Mathesius, c|o Lombard Governor Company, Ashland, Mass.
E. L. Mayberry, 372–373 Pacific Elec. Building, Los Angeles, Cal.
R. V. McKay, 23 North Fourth Street, Steelton, Pa.
H. K. Merriam, 13 Williams Avenue, Hyde Park, Mass.
Harold Morse, 520 Second Street, Brooklyn, N.Y.
H. K. Munroe, Baton Rouge Electric Company, Baton Rouge, La.
J. E. Murphy, Oliver Iron Mining Co., Coleraine, Minn.
Arthur Neale, 321 Lafayette Avenue, Buffalo, N.Y.
William Neilson, Wonder, Nev.
J. R. O'Hara, Jr., Box 375, Knoxville, Tenn.
J. B. L. Orme, 112 Water Street, Boston, Mass.
L. A. Parker, 372–373 Pacific Elec. Building, Los Angeles, Cal.
G. P. Parsons, Woonsocket El. M. & P. Company, Woonsocket, R.I.
F. S. Phelps, 78½ West Street, Worcester, Mass.
H. S. Philbrick, University of Missouri, 509 Rollins Street, Columbia, Mo.
C. B. Powell, 3804 Locust Street, Philadelphia, Pa.
J. A. Root, mail via 5019 Raymond Avenue, St. Louis, Mo.
E. B. Rowe, 85 Prince Street, West Newton, Mass.

Philip B. Sadtler, 39 South 10th Street, Philadelphia, Pa.
R. N. Sargent, Fayette R. Plumb. Inc., Frankford, Philadelphia, Pa.
S. Seaver, Sullivan Machine Company, Birmingham, Ala.
A. B. Sherman, Jr., 142 Columbia Heights, Brooklyn, N.Y.
C. H. Shapleigh, Technology Chambers, Boston, Mass.
N. M. Seiglie, Ciego de Avila, Camaguey, Cuba.
A. L. Sherman, 4 Grand Street, White Plains, N.Y.
Ernest M. Smith, 1615 West Genesee Street, Syracuse, N.Y.
W. G. De Steiguer, Cameron, Mo.
E. C. Stanton, Box 441, Alhambra, Cal.
A. T. Trowbridge, 26 Tilton Street, New Haven, Conn.
C. E. Tucker, 112 Water Street, Boston, Mass.
J. P. Varian, 253 Lincoln Avenue, Denver, Col.
A. P. Watt, Boston Consolidated Mining Co., Bingham Canyon, Utah.
F. H. Willcox, 26 South 5th Street, Duquesne, Pa.
N. C. Willey, 200 Tenth Avenue, No., Seattle, Wash.
J. I. Wrinkle, 27 Cumberland Street, Boston, Mass.
W. A. Sheldon, Ashby, Mass.
Theodore Dissel, c|o 215 Newbury Street, Boston, Mass.
C. D. Richardson, 14 Pratt Street, Allston, Mass.
C. L. Kasson, 21 Mill Street, Dorchester, Mass.
John H. Cady, 100 William Street, New York, N.Y.
J. N. McKernan, 28 Bickerstaff Street, Boston, Mass.
A. M. Winslow, 9 Sturgis Street, Worcester, Mass.
O. H. Perry, Jr., 242 Nesmith Street, Lowell, Mass.
George F. Hobson, 164 Holywood Avenue, Lowell, Mass.
H. W. Beers, 344 Equitable Building, Atlanta, Ga.
N. A. White, 317 North Sixth Street, Camden, N.J.
A. E. Wells, Murray's Smelter, Murray, Utah.
H. R. Patterson, Trenton Iron Company, Trenton, N.J.
R. W. Rose, 26 Woodland Street, New Haven, Conn.
S. P. Newton, 601 Canal Road, Cleveland, Ohio.
W. H. Clifford, 781 Eastern Parkway, Brooklyn, N.Y.
G. W. Burpee, P.O. Box 393, Brockton, Mass.
George C. Furness, 278 Orange Street, Manchester, N.H.
O. B. Blackwell, Engineering Department American Telephone and Telegraph Company, 15 Dey Street, New York, N.Y.
Mildred E. Blodgett, St. John Baptist School, Stuyvesant Square, 231 East 17th Street, New York, N.Y.

Ralph Hayden, Box 362, Anaconda, Mont.
J. L. Ackerson, c|o Navy Department, Washington, D.C.
C. L. Anson, Technology Chambers, Boston, Mass.
A. S. Boynton, 268 Main Street, Groveland, Mass.
G. E. Burknap, c|o American Express Company, Rome, Italy.
R. L. Dyer, Yuma, Ariz.
Colby Dill, Perth Amboy Chemical Works, Perth Amboy, N.J.
E. P. Chase, 3 Park Place, Stamford, Conn.
C. H. Chase, 15 Westfield Street, Dedham, Mass.
S. C. Coey, 383 Haverhill Street, Lawrence, Mass.
F. M. Fuller, Technology Chambers, Boston, Mass.
W. W. Gaylord, 16 North Willow Street, Waterbury, Conn.
R. D. Gatewood, United States Navy Yard, Mare Island, Cal.
H. C. Henrici, Missouri and Kansas Telephone Company, Sabetha, Kan.
R. T. C. Jackson, 169 Locust Street, Fall River, Mass.
B. R. Honeyman, 60 North 20th Street, Portland, Ore.
C. A. Holmquist, 352 Guy Paul Avenue, Amsterdam, N.Y.
G. F. Hunt, 22 Beckett Street, Portland, Me.
J. W. Johnson, 30 Summer Street, Dorchester, Mass.
C. A. Merriam, 65 Langdon Street, Cambridge, Mass.
J. Garfield Riley, Washington Y. M. C. A., Washington, D.C.
Mary J. Ruggles, 14 Union Street, Schenectady, N.Y.
G. C. Simpson, Barstow Stove Co., 55 Portland Street, Boston.
A. L. Stevens, Velardena Plant American Smelters Securities Company, Velardena, Dgo., Mexico.
P. A. Staples, Houghton Consolidated Electric Light Co., Houghton, Mich.
R. W. Seyms, Youngstown Foundry and Machine Co., Youngstown, Ohio.
L. Tuckerman, C. F. & I. Co., 507 Bank Block, Trinidad, Col.
H. L. Williams, Homestake Mining Company, Deadwood, So. Dak.
R. S. Clarke, Lamson Supply Company, 163 Devonshire Street, Boston.
F. C. Lutze, 93 Federal Street, Boston, Mass.
E. D. McCain, 2420 Perrysville Avenue, Allegheny, Pa.
Clifford Lynde, New York Board Water Supply, Walden, N.Y.
Leo Delvin, 475 Belvidere Street, San Francisco, Cal.
M. J. Ahern, S.B., 8 Universitätsstrasse, Innsbruck, Tirol, Austria.
Howard C. Blake, 2536 Bancroft Way, Berkeley, Cal.
Roger Babb, Worcester Street, Natick, Mass.
Mark H. Place, Milton, Rock County, Wis.
Harold E. Young, Department of Cartography, Manila, P.I.

H. O. C. Isenberg, c|o Jaspar Whiting, Oxford Paper Company, P.O. Box 102, Rumford Falls, Me.
H. S. Mears, Columbia Steel Company, 721 Flanders Street, Portland, Ore.
E. S. Manson, c|o Telluride Power Company, Provo, Utah.
H. L. Lamb, South Nelson, N.H.
R. C. Thayer, 10 Hamilton Street, Roxbury, Mass.
Colby Dill, 156 High Street, Perth Amboy, N.J.

—William E. Hogel (III.) was seen last fall in Denver, Col., by Bardwell. Bardwell did not get a chance to speak to him. We haven't heard from Hogel for a long time, and would like to learn his address.

Addresses are also wanted by the secretary for the following: H. W. Streeter, C. M. Hutchins, F. H. Andrews.

Announcements and Regular Letters.—Word has just been received of the engagement of Howard C. Blake, '06, to Miss Sarah Hopkins, of Oakland, Cal.—Congratulations are also due to Edward M. Eliot, whose engagement to Miss Margaret C. Fuller, of Cambridge, Mass., has just been announced. Eliot has been East, and is now returned West. Mail will be forwarded through his home address, 5468 Maple Avenue, St. Louis, Mo.—E. Harley Daniels, of Natick, was married in June, 1907.—Fay W. Libbey is married, has left Cobalt, and gone West.—Charles William Mowry is engaged to Miss Helen Watts, of Lynn, Mass.—Also we have our suspicions as to Charles Burrows Morey.—S. C. Coey is in Lawrence, putting in an electric drive at the Arlington Mills.—L. A. Lawrence (VI.) was married in Hartford, Conn., on February 22, his birthday.—C. F. Edwards's address is unknown. It is rumored he is married and is out in San Francisco.—H. C. Merriam (V.) returned from Colorado to Fitchburg, Mass.—By wireless we understand that C. F. Willis is about to capitulate.—E. F. Tomlinson (XIII.) is also heard from by another wireless disturbance.—Herbert Whiting is in business as member of firm, Conant, Whiting & Co., Inc., electrical engineers and contractors, 112 Water Street, Boston, Mass. Is doing prosperously.—Ralph Thayer, while out in Goldfield, Nev., was sick with spinal meningitis. After a hard struggle he won out, and is now at home. Address, 10 Hamilton Place,

Roxbury, Mass.—Keleher is with the Holophane Glass Company in New York. He is going to South America as representative of the company, in the Latin-American countries. "Kel" was over in Boston a short time ago, and just made connections with Harold Young (VI.), well known as "Cy" Young, who was just starting for Manila to enter a position in the department of cartography. Credit is due to "Cy" for capturing the position by competitive civil service exams.—Mr. H. P. Barnes, of New York, scientist, is taking the fresh-air cure out in field party work. "Pete" was badly broken down with hard work at "Tech," but now is able to sit up and take notice (of a pretty girl, etc.).—Tom Hinckley, who is one of our best correspondents, is now located at the University of Minnesota, assisting in the Civil Engineering Department. We hope that the memory of his years at Tech is still so fresh that he will take pity on the poor youths in his Structures class.—Ralph Dyer is now hydrographer with the United States Reclamation Service, down in Yuma, Ariz. He likes his work immensely, but his description of the climate in Yuma "bordered on the crude."—Chas. T. Bartlew is in Texas.

—Charles A. Howard writes:—

I have been with the New York Edison Company since graduation, except for the first month, when I was a "Hello" girl with the New York Telephone Company. Like my present work pretty well, which is mainly design work in connection with three power plants of 220,000 kilowatts.

—"Wee" Williams writes from California:—

Have been having pretty tough time of it in this beastly desert, and am looking forward to another change. I am engineer with the Tecopa Consolidated Mining Company, but only temporarily. The heat down here is something frightful, and the lonesomeness is as bad, and I'm beginning to talk to myself already.

"Wee" is now with the Homestake in Deadwood, So. Dak.—Guy Ruggles writes that Hallowell and he are running several ore tests for the B. & M. Company, Great Falls, Mont.

—Mayberry writes from Los Angeles:—

I am enclosing some clippings which may be of interest to you and to the class at large. Besides the buildings described in these clippings, we have completed some three hundred and forty feet of retaining walls, also a hotel and depot at Williams, Ariz., and another at Syracuse, Kan.

Mayberry & Parker seem to have built up quite a substantial business.

—Marden Hayward writes from Williamstown, Mass.:—

I attended my first faculty meeting last week, and am beginning to find out what takes place behind the scenes. It is rather interesting after having been an undergraduate so long.

—Bob Hursh is progressing well as assistant to the manager and engineer of the Empire Zinc Company, and is located in Monterey, N. L., Mexico.—The secretary regrets that he still has a dozen or more letters from men everywhere from Hawaii to Malden, but he will try and put a few more in in the next issue. Don't let this prevent any one from writing, however, for the secretary will make room for them somehow.

Notice.—Has your spirit moved? If not, kindly forward the necessary bone to the secretary. The spirit of the class treasurer is very flighty.

1907.

ALEXANDER MACOMBER, *Sec.*, 83 Newbury Street, Boston, Mass.

I. *On the Part of the Secretary*

FIRST ANNUAL REUNION AND COMMENCEMENT CELEBRATION OF THE CLASS OF 1907

The arrangements for the reunion are in charge of a general committee, as follows: Bryant Nichols, chairman; C. E. Allen, treasurer; W. W. Bigelow, secretary; C. D. Howe, H. S. Wonson. The reunion and dinner will take place on Commencement Day. The dinner will be at the Hotel Nottingham, Huntington Avenue. Price per plate, $2. A room has been secured at the same hotel for the entire day, which will be the headquarters for the class. Some of

the general committee will be there all day to greet the members of the class, and registration material will be provided. Notices containing full information regarding the events of the day will be mailed to all members of the class about May 10. The committee will welcome suggestions concerning the celebration from any '07 man, and any communications should be sent to Bryant Nichols, 10 Eng. A, M. I. T., Boston, Mass.

It has seemed wise that the class should adopt a new constitution as alumni, and this is being drafted by the above committee, and will be presented to the class for approval.

The first reunion of '07 men in the vicinity of Boston was held the first of the year, and the following account of it was written by Nichols (II.), and kindly forwarded to the secretary:—

During the early part of December some of the members of '07 who are back at the Institute held a meeting to discuss the advisability of holding a reunion of the '07 men who were in the vicinity of Boston. It was decided that a dinner would be a good thing, and a committee, consisting of C. E. Allen, C. D. Howe, and W. W. Bigelow, was chosen to have full charge of the affair. As a result, sixty-seven enthusiastic members of the Freshman Class of the Alumni Association gathered at the Tech Union on Saturday evening, January 11. The larger part of those present were graduates, but there were many who are still at the Institute as students, and also several who left at some time during the four years. The guests were Professor Swain, Professor Bates, Bursar Rand, and Mr. Walter B. Snow, the new president of the Alumni Association. Harold D. Wonson ably filled the position of toastmaster. In connection with his introductory remarks he read a clipping from the *Tech* which described the first Freshman dinner of '07 as being the most enthusiastic and largely attended Freshman dinner ever held at the Union. The record has never been broken by succeeding classes, and he hoped the class would always set the pace in this respect. The first speaker was Mr. Snow, who spoke of the Alumni Association. Mr. Rand was next, and, contrary to his usual custom, told some really funny stories. He read a portion of a letter which he had received from Macomber, who is at present in California, and also a postal card from Mac, written from Salt Lake City. Mac said he "was having a great time there," and the bursar remarked he didn't exactly understand why Mac should be having such an especially good time in that city!

Wonson reminded the fellows how at the first class dinner the loving cup had been passed around, each man before drinking giving his name and home. He then stated that the old cup would again go round, and each man was to give his name, his business, and state whether he was married or engaged. It was very interesting, and evidently nearly all had been so busy getting rich that they had neglected the calls of Cupid, for of those present but one was married and four confessed to engagement. Professor Swain and Professor Bates gave very interesting and humorous talks, and the fellows rose from the table about ten o'clock, voting the first '07 alumni dinner a great success.

We are happy to announce the following, which shows that 1907 is more than holding its own in the matrimonial line: —

On Dec. 18, 1907, Hudson B. Hastings was married to Miss Rena Carrie Porter at Walpole, N.H. At home after February 19, at 69 Federal Street, Brunswick, Me. Hud has the rank of assistant professor at Bowdoin, and has started and is in charge of the course in civil engineering.

On January 18 Lawrence Allen was married to Miss Helen Alford Abbott at Boston. Lawrie is now at Waterbury, Conn., with the firm of Horton & Hemenway, the contractors. We are also informed that E. C. Noyes (I.) and H. D. Loring (I.) have recently become Benedicks. On behalf of the class we extend our heartiest wishes for the happiness of all these fellows, and congratulate them on maintaining the standards of old '07.

With all these happy tidings we turn with sadness to announce the sudden death of our classmate A. P. Fuller, of Course I. He was stricken with pneumonia in Kentucky, and died quite suddenly, the funeral being held from his home in Milton, Mass., on March 7. Fuller was prominent in the class, entering athletics during his Freshman and Sophomore years. The class has lost a loyal mate, and its sympathy goes out to his bereaved family.

II. *Personal Notes*

Bob Albro is back at Tech this term.—J. P. Alvey, Jr., is located at 711 E. & C. Building, Denver, Col.—A. B. Arnold has changed

his address to 605 Pleasant Street, Belmont, Mass.—C. W. Beane's address is 7 Winslow Street, Watertown, N.Y.—C. A. Bowen is at 35 St. Botolph Street, Boston.—W. H. Bradshaw's address is 688 Nostrand Avenue, Brooklyn, N.Y.—Cenedella can be reached at 127 E. Main Street, Milford, Mass.—H. R. Chase has changed his address to 53 Beacon Avenue, Providence, R.I.—A. O. Christensen is now back at the Institute.—J. A. Correll is at the University of Texas at Austin, teaching in the electrical engineering department.—E. R. Cowen's address is the Lackawanna Club, West Seneca, N.Y.—L. H. Cutten, Box 559, Dayton, Fla.—Carrol Dean is now in the equipment department of the Norfolk (Va.) Navy Yard.—Dempwolf's address is 285 Newbury Street, Boston.—C. R. Denmark is in the county engineer's office at Pittsburg, Pa.—We are glad to note that Parker Dodge has settled down once more, and is now with the Youngstown Car Manufacturing Company. His address is 5917 Alder Street, Pittsburg, Pa.—K. W. Dyer is located at 12113 Wallace Street, West Pullman, Chicago.—S. J. Egan is at 720 Boren Avenue, Seattle, Wash.—H. A. France is with the Pennsylvania Steel Company at Steelton, Pa.—John Frank has been discovered at last with the Commonwealth Electric Company of Chicago. His address is 3810 Grand Boulevard, Chicago.—Louis Freedman's address is 135 West 86th Street, New York City.—F. W. Friend is with Al. Giles, architect, 114 West Houston Street, San Antonio, Tex.—Warren Gates is at Youngstown, Ohio, with the General Fireproofing Company.—J. M. Gaylord is now located at 25 Carroll Block, Madison, Wis.—A. E. Green has left the Noble Electric Steel Company of California, and is now engaged in some experimental work.—J. W. G. Hanford is now with Nixon & Kimmel, electrical contractors, of Spokane, Wash. He writes that Kennedy (VI.) and Greene (I.) are also there, but we have not heard from them as yet.—J. C. Kinnear is at Goldfield, Nev.—R. H. Kudlich is at Drifton, Pa.—Jack McMillan is still in Mexico, but mail should be sent to 2950 Newark Street, Washington, D.C.—J. T. Mahar is located at 339 South Station, Boston.—Nate Middleton's address is 700 3d Avenue, Chestnut Hill, Richmond, Va. He is still slaving for the American Locomotive Company.—F. A.

Naramore is at 5412 Washington Avenue, Chicago.—G. R. Norton writes that he is very busy figuring out ratios of $\frac{f}{f}$ at the Watertown Arsenal for Mr. Howard. See the "Little Brown Book," page 418. His address is 33 Holton Street, Allston, Mass.—E. C. Noyes is at Pawtucket, R.I., with the Stone & Webster Engineering Corporation.—E. H. Packard is now with the Haynes-Piper Company of Ayer, Mass., as chemist. Thirty-six miles is a terrible distance to Boston, isn't it, Pack?—Allen Pope has changed his address to 1216 Columbia Road, Washington, D.C.—J. R. Randall's address is 518 12th Avenue, S.E., Minneapolis, Minn.—E. C. Richardson is located at 26 Union Avenue, Schenectady, N.Y.—DeW. C. Ruff's address is 603 Lincoln Avenue, St. Paul, Minn.—D. E. Russ is with the Commonwealth Glue Company at Peabody, Mass.—R. E. Shedd is at 212 Highland Avenue, Somerville, Mass.—Windsor Soule's address is 1651 Beacon Street, Brookline, Mass.—E. H. Squire, 16 Washburn Avenue, Auburndale, Mass.—F. C. Stockwell is at the Stevens Institute of Technology at Hoboken, N.J.—C. F. Story is located at Milwaukee, Wis., 57 Loan and Trust Building.—H. A. Sullwold is at 530 West 124th Street, New York City.—Phelps Swett is at Beldens, Vt.—Bob Thayer has been transferred to the Dunkirk, N.J., plant of the American Locomotive Company.—E. E. Turkington is at Pottsville, Pa., care East Pennsylvania Railway Company.—Laurence Wetmore is at the Watertown Arsenal, 147 Dexter Avenue, Watertown, Mass.—L. C. Whittemore has changed his address to 30 Fairview Street, Waterbury, Conn.—E. T. Williams (ex-'07) is back at Tech again.—E. C. Wilson's address is 139 Main Street, Waterville, Me.

III. *Letters*

Parker Dodge writes:—

. . . I now find myself here in Pittsburg with the Youngstown Car Manufacturing Company. The other day, as I was groping my way through the smoke, I ran across Rutherford Bingham, who is here with the Crucible Steel Company. In Washington I met G. R. Jones and Allen Pope, both by the sheerest accident. "Granny" was in a barber shop, getting

one of those shaves you read about, and saw me going by. The next I knew I was being urged to come back to the shop by a white-coated barber. I rather resented what seemed an undue quest of business, but was glad when I saw the real motive. Granny is helping strain the mud and microbes out of Potomac water at the filtration plant. Al Pope I met on a street-car. He was hurrying for a Baltimore train, as he was going over "to see his girl," as he blushingly explained. When not in Baltimore, he is assisting the Danforth Company of Buffalo to install a heating plant at the Soldiers' Home. . . .

From John Frank:—

I loafed all summer on the Maine coast, and nearly got married; but licenses are high in Maine, so I escaped. 1907 is certainly doing well matrimonially, and I hope the good work will continue. I have been with the Edison Company since October 1, and have a good job in which to learn. I am in the testing laboratory with about thirty college men. It would make your head swim to see me work out transformer regulation nowadays. I have been as homesick as blazes for Boston ever since I left. Chicago is a pretty fair town, but is not 1–2–6 with Boston. My best to any of the boys you may see. . . .

Robert H. Richards

The F

PART II

H. Reed.

The Technology Review

Vol. X. JULY, 1908 No. 3

ROBERT HALLOWELL RICHARDS

I have been asked to write this short article in commemoration of the fortieth anniversary of the beginning of Professor Richards's service with the Massachusetts Institute of Technology, to express in some degree our appreciation of his work and its results, not only for and in direct connection with the Institute, but also apart from this in the fields of mining engineering and metallurgy, to all of which he has been equally devoted during these twoscore years.

The time I have had for preparation and my lack of familiarity with much of his life and work prevent my being able to do full justice to the subject, but, so far as I am able and so far as I do know, I can and do testify to the great value of his performance, and to the debt which we, as students, and the profession at large owe him for these years of service.

"If I were asked," said an associate of many years, "what has been most distinctive and conspicuous in Professor Richards's career, I should say that it was his intense devotion to the Institute." This is undoubtedly true, and the interest in his life and the appreciation of his work should by no means be confined to the students and graduates of the mining and metallurgical courses. Entering the Institute with the first of its students in February, 1865, in his twenty-first year, after an unsatisfactory and, in fact, dishearten-

ing educational experience in the then almost universally classical courses, scientific studies and technical work opened for him, as he himself says, "the beginning of a new life." The work in the laboratory, in the field, the lectures on the natural sciences, then so new as subjects of instruction, were like "the opening of windows to permit of wide vision over the ripening harvest of knowledge." The exhilaration of these studies aroused an enthusiasm not only for the subjects themselves, but for the development of the future of the institution with which they were so closely welded, and which was then fighting its way into recognition. Thus, immediately after graduation, he accepted a position of assistant in chemistry, and successively, during subsequent years, was instructor in chemistry, professor of mineralogy and assaying, and in 1884 professor of mining engineering and metallurgy. But his activity during these years was not by any means wholly indicated by the titles of these positions which he held. The Institute's existence and growth were far from easy, many obstacles had to be overcome, hard times had to be passed through, hard problems had to be solved, and in all of these he assisted. Thus, in the late seventies, Professor Richards assumed the duties of Secretary of the Institute in addition to his work of instruction, and discharged the tasks of these several positions with energy, patience, and devotion during a time of great need.

Professor Richards's lectures in mining and allied subjects were to me always interesting, and impressed themselves by their thoroughness and the evidences of care in their preparation. And such qualities, as expressions of the conscientiousness of the man, had, and always must have, a great influence upon the student. His patient and painstaking example has always remained with me since my student years, as a stimulant to further endeavor when discouraged by failure,

as a check upon impulsive action and rash conclusion. These personal qualities of a teacher are sometimes of more importance to the future career of the student than are the actual subjects studied, and the successes which have been attained by many of his graduates have, I think, been in no small part due to these qualities of our mentor.

The laboratories of mining engineering and metallurgy of the Institute were the first of their kind in the world, and have been the model for many others since established. Their development has been almost entirely due to Professor Richards, and are an achievement of which he may well be proud. Their usefulness primarily for instruction cannot be disputed: they offer the opportunity for "doing things," and the act of doing things is in itself a most important part of education. As Professor Richards himself expresses it, "a thing done which is good enough to stand on its own feet is a victory and a source of strength. If it is a failure and cannot stand on its own feet, it is a lesson one never forgets." But, in addition to their value as instruments of instruction, these laboratories have been perhaps equally valuable as aids in the investigation of milling and metallurgical problems. It was in these laboratories that some of the first investigations were made of the treatment of ores of the Calumet & Hecla Mine, and the contributions of that company, I believe, aided at least in the first equipment of the laboratories. Since then ores from many mines of many parts of the country have been tested and treated, and many graduates and other engineers have made use of the equipment for the testing of ores or of processes, the results of which work have led to the successful operation of many mines and mills. Thus the usefulness of these laboratories has not ended with the instructing of the pupil, but the engineer of later years has come back to make use of the old

tools, and, in return, has assisted in renewing and improving them. Therefore an acknowledgment which Professor Richards would especially like to make is the part his old students have played in making it possible for him to develop the Institute laboratories.

Professor Richards was associated with the first summer school of mining in 1871, and has maintained and developed them ever since. Their value as means of instruction was very great. They afforded opportunities for students to see how things were actually done, they strengthened the ties between teacher and pupil, they introduced the student to managers of mines and works, which frequently lead to subsequent employment, they showed the latter that the student was a useful sort of person, and could be trusted.

The product of the teacher is the student or graduate: the accomplishment of the latter is a test and measure of the former. The wide scope of the work, the high standing of many, and the successes his students have accomplished in the fields of mining and metallurgy are especially a source of gratification to Professor Richards, and redound greatly to his credit. The students of the mining engineering and metallurgical departments to date who have gone out into the world must number fully six hundred. Of these by far the greater part are in the practice of their professions or allied branches, and fully one hundred and thirty occupy leading places, and of these as many as forty have attained especial prominence. Among the latter may be included such names as Henry M. Howe, of the class of '71, Charles W. Goodale, of the class of '75, Walter R. Ingalls, of '86, Thomas C. DuPont, of '84, Frederick H. Newell, of '85, and many others.

During the many years of his professional life, and notwithstanding his activities at the Institute, Professor Richards

has done much important work for the advancement of other enterprises. As early as 1868 he was engaged in assaying for the Calumet & Hecla Mining Company, and he has continued to serve that company to a greater or lesser extent ever since. His years of principal service, however, were between 1878 and 1888, and since that time his relations with the company have been more in consultation at irregular intervals. Mr. Alexander Agassiz, in speaking of Professor Richards's services, says that his work was principally for the development and improvement of the mill, especially immediately after the fire of the early eighties. This work, Mr. Agassiz says, resulted in important increases in saving, especially in the recovery of values from the tailings through the development of the slime plant, and in improvements in smelting methods. The later growth of the mill and smelting plant have been in a large part along lines laid out by Professor Richards, and in furtherance of his original suggestions, with the improved means available in later years.

Professor Richards has further acted as consulting engineer in the ore dressing mill of the Pennsylvania Steel Company at Lebanon, and has served in a similar capacity for the Sulphur Mines & Railway Company of Virginia. At the Longdale Iron Works in Virginia he introduced hydraulic classifiers. He is on the staff of the Firth, Sterling Steel Company in connection with the concentrating of their wolfram deposits in Boulder County, Colorado, and he has served the Boston & Montana Company of Great Falls, Mont., in connection with their concentrating plant, and also the Eustis-Pyrite Mine in Quebec. In 1905 he spent the summer at Portland, Ore., working, in connection with Dr. David S. Day, for the United States Geological Survey on an investigation of the black sand deposits.

The results of this work were of value not only directly

to those employing him, but also in widening his own field of work, and in making him thereby of greater value as an instructor. The outcome of his work in other fields is embodied partly in a large number of publications, a list of which is appended to this article. Further results are expressed in various inventions upon which he has been working intermittently for many years. Particular attention has been given to classifiers, and his classifiers and pulsators have been installed in many places, and their use appears to be increasing. These investigations included not only the necessary practical calculations for large installations, but also many theoretical studies, the results of which have been put into literature. He has at all times, during the past few years, had one or more private assistants engaged on this work. As developments of this line of work, he has made the following inventions: a Suction Filter Pump (described in the *Chemical News* in the early '70's); a Jet Pump (described in the transactions of the A. I. M. E. in the early '70's); the Calumet Classifier (patented in the '80's); a Sieve Jig (patented in the '80's); a Stadia Prism (patented in the '90's); and a Hindered Settling Classifier, a Pulsator Jig, and a Pulsator Classifier, the last three all patented in 1908.

But the greatest single product of Professor Richards's life-work is his well-known work on Ore Dressing. This is the most exhaustive American treatise on the subject, and for thoroughness and usefulness is not surpassed by any other publication. The first edition of this work was published by the *Engineering and Mining Journal* of New York and London in 1903. It comprises over 1,200 octavo pages, and there are incorporated 560 illustrations, many of which are from original drawings. The preparation of this work occupied Professor Richards many years, and it will always remain a valuable work of reference and a monument to his

memory. In addition there are a large number of minor publications on a great variety of subjects,—a list of which is given in the appended bibliography.

Professor Richards is a long-time member of the American Institute of Mining Engineers, and was its president during the years 1886–87. He is further a member of the American Association for the Advancement of Science, the American Academy of Arts and Sciences, the American Forestry Association, the New Hampshire and Massachusetts Forestry Associations, the Massachusetts Cremation Society, the Boston Society of Natural History, the Boston Society of Arts, the Economic Club of Boston, the University Club, and other organizations.

Professor Richards is a member of the Protestant Episcopal Church, and is prominent in its work, and is also junior warden of the Church of the Good Shepherd in Boston. He is also president of the Board of Directors of the Eliot School in Jamaica Plain. He received the degree of S.B. from the Institute of Technology in 1868, and in June, 1908, there was conferred upon him the degree of LL.D. by the University of Missouri.

But beyond these material facts and accomplishments I, and, I believe, all his students and those who really know the man, love and esteem him for his unselfish and gentle nature, for his patience and his forbearance, and for the steadfastness with which he has held to his ideals through life, with all its hard work, its drudgeries, and its disappointments. He has lived serene through them all. To him, as is the case with all others, there must have been much that was irksome in the constant grind of the lecture-room, of the laboratory, of the shop, the mill, and the office. His tastes are nature-loving, and his pastimes are with plants and flowers and camera. He delights to be out of doors, to walk and to

ride through field and forest. His is a vigorous, well-knit frame, which is still fit to share and enjoy the active sports of much younger men. With so much work so well done for so long a time, may the next score years bring to him the well-earned rest and play which will round out and carry his life into serene old age!

ARTHUR WINSLOW, '81.

BIBLIOGRAPHY

1869. On the Use of Chromate of Barium in Quantitative Analysis. Am. Jour. Sci. (2), XLVIII. 200–202.

1870. Experiments on Bunsen's Filter Pump. Chem. News, XXII. 77–79.

1873. The Mining and Metallurgical Laboratories of the Mass. Inst. of Technology. Trans. Am. Inst. Min. Eng., I. 400.

1873–74. Report on Mining Laboratories. M. I. T. Prest.'s Rep., 1873, 75–83; 1874, 38–45.

1874. A Jet Aspirator for Chemical and Physical Laboratories. Am. Jour. Sci. (3), VIII. 412–428.

On a Newly-discovered Lead Vein in Newburyport, Mass. Proc. Bost. Soc. Nat. Hist., XVII. 200–204.

1875. Report on the Course of Mining Engineering. M. I. T. Prest.'s Rep., 1875, 81–93.

The Newburyport Silver Mines. Trans. Am. Inst. Min. Eng., III. 442–445.

Notes on Assaying. Printed for the Use of Students. Pph. 16mo, pp. 20.

1876. An Improved Form of Aspirator. Chem. News, XXXIV. 141.

1877. Jet Pumps for Chemical and Physical Laboratories. Trans. Am. Inst. Min. Eng., VI. 492–498.

A Mining Laboratory. Id., VI. 510–518.

An Edgestone Crusher for Analytical Samples. Id., VI. 518–520.

1880. Notes on Battery and Copper Plate Amalgamation. Id., VIII. 362–370.

Battery and Copper-plate Amalgamation. Proc. Soc. Arts, M. I. T., 1879–80, 61. Trans. Am. Inst. Min. Eng., VIII. 362.

1881. Notes on the Assay Spitzlutte. Trans. Am. Inst. Min. Eng., IX. 318.

1882. Battery and Copper-plate Amalgamation. Sci. Am. Supp., Aug. 19, 1882.

1883. Changes in the Structure of Block Tin. Science, I. 102.

Lines of Weakness in Cylinders. Id., I. 106.

An Illustration of Lines of Weakness in Cylinders. Trans. Am. Inst. Min. Eng., XI. (222), 234.

Method of Copper Analysis. Trans. Am. Inst. Min. Eng., XI. 133.

Samples of Copper Products. Trans. Am. Inst. Min. Eng., XI. 121, 122.

A New Hydraulic Separator to prepare Ores for Jigging and Table Work. Trans. Am. Inst. Min. Eng., XI. 231.

1884. Economy of Fuel in Iron Manufacture. Science, III. 358.

The Hot Blast in Making Iron. Id., III. 72, 73.

1887. American Mining Schools. Trans. Am. Inst. Min. Eng., XV. 309 and 809. Pres. Address, Bethlehem Meet.

(With R. W. Lodge.) The Descent of the Charge in a Blast Furnace. Id., July, 1887. Also Tech. Quar., I. 140. Trans. Am. Inst. Min. Eng., XVI. 149.

1888. (With A. E. Clark.) The Summer Schools of Mines. Proc. Soc. Arts, M. I. T., 1888–89, 40.

1889. (With A. E. Woodward.) The Velocity of Bodies of Different Specific Gravity Falling in Water. Id., XVII. 644. Also Tech. Quar., III. 151. Trans. Am. Inst. Min. Eng., XVIII. 644.

1890. Development of a System of Amalgamation of Gold Ores. Tech. Quar., III. 45.

1891. A Hand Telescope for Stadia-work. Trans. Am. Inst. Min. Eng., XX. 732.

Manual Training as an Inspiration to Mental Development. Proc. N.E. Conference of Educational Workers. Also Pph. under title "The Eliot School Course of Manual Training." July, 1892.

One Month's Work on Two Plane-tables (with map). Tech. Quar., IV. 122.

1892. A Hand Telescope for Stadia-work. Tech. Quar., V. 56. Trans. Am. Inst. Min. Eng., XX. 732.

1893. Further Notes on Prismatic Stadia-telescope. Trans. Am. Inst. Min. Eng., 1893.

A Graphical Slag Calculation. Trans. Am. Inst. Min. Eng., 1893.

1890–93. Lithographic Notes on Ore Dressing. 8vo, pp. 152. Trans. Am. Inst. Min. Eng., XXII. 650, 700.

Lithographic Notes on Metallurgy of Iron. 8vo, pp. 71.

Lithographic Notes on Rock Drills. 8vo, pp. 41.

Lithographic Notes on Blowpipe Silver Assay. 8vo, pp. 2.

Lithographic Notes on Mining Laboratory. 8vo, pp. 22.

Lithographic Notes on Metallurgy of Copper. 8vo, pp. 88.

Lithographic Notes on Summer School of Mining. 8vo, pp. 41.

(With H. O. Hofman.) Lithographic Notes on Syllabus of Metallurgy. 8vo, pp. 11.

(With H. O. Hofman.) Lithographic Notes on Syllabus of Mining. 8vo, pp. 8.

1893. Notes on Obergrath's Bilharz's Paper on Ore Dressing. Trans. Am. Inst. Min. Eng., XXII. 700.

Notes on Douglas Paper on American Improvements and Invention in Ore Crushing and Concentration. Trans. Am. Inst. Min. Eng., XXII. 650.

Notes on American Mining Schools. Trans. Am. Inst. Min. Eng., XXIII. 455.

Notes on Organization of Mining Laboratory. Trans. Am. Inst. Min. Eng., XXIII. 460.

1894. Close Sizing before Jigging. Trans. Am. Inst. Min. Eng., XXIV. 409, 918, 920, 924, 928.

1895. Relation of Mining Engineers to Other Fields. Trans. Am. Inst. Min. Eng., XXV. 301.

1896. The Cycle of the Plunger-jig. Trans. Am. Inst. Min. Eng., XXVI. 3, 1034.

Remarks in Discussion of Mr. Goodale's Paper on Concentration of Ores in Butte District, Mont. Trans. Am. Inst. Min. Eng., XXVI. 1108.

Remarks on Mr. G.'s Paper on the Plunger-jig. Trans. Am. Inst. Min. Eng., XXVI. 1036.

1897. Sorting before Sizing. Trans. Am. Inst. Min. Eng., XXVII. 76.

(With C. E. Locke.) The Spitzkasten and Settling-tank. Trans. Am. Inst. Min. Eng., XXVII. 249.

1898. Review of the Literature on Ore Dressing in 1898. The Mineral Industry, VIII. pp. 694–701.
Ore Dressing. The Mineral Industry, VIII. 744–779.
1900. Progress of Gold Milling during 1900. The Mineral Industry, IX. 353.
Review of the Literature of Ore Dressing in 1900. The Mineral Industry, IX. 731.
1901. Progress in Gold Milling during 1901. The Mineral Industry, X. 330.
Review of the Literature on Ore-dressing in 1901. The Mineral Industry, X. 747.
Ore Dressing, in Encyclopædia Britannica Supplement.
1902. Ore Dressing. 1,200 pages. Publ. by Eng. and Min. Journal.
Progress in Gold Milling during 1902. The Mineral Industry, XI. 296.
Review of the Literature on Ore-dressing in 1902. The Mineral Industry, XI. 639.
(With E. E. Bugbee.) School Laboratory Work, a Free Milling Gold Run. Trans. Am. Inst. Min. Eng., XXXIV. 478.
Technical Education. Jour. Am. Foundrymen's Assoc., XI. 95.
1903. Ore Dressing. 2 vols. 8vo, pp. 1,236. Publ. by Eng. and Min. Journal.
Notes on Mining, third year, first term. 264. Publ. by Inst.
Progress in Gold Milling during the Year 1903. The Mineral Industry, XII. 397.
Mining Education. Eng. and Min. Jour., LXXVII., 836.
1904. Progress in Gold Milling during 1904. The Mineral Industry, XIII.
Review of the Literature on Ore-dressing in 1904. The Mineral Industry, XIII.
Notes on Mining, third year, second term. Publ. by Inst.
Mining Schools. Eng. and Min. Journal, 1904.
Relation of Mining Engineering to Other Fields. International Congress of Arts and Sciences at St. Louis, 1904.
1905. Progress in Gold Milling in 1905. The Mineral Industry, XIV. 289.
Progress in Ore Dressing and Coal Washing in 1905. The Mineral Industry, XIV. 685.
Black Sand Report. With D. T. Day. U.S. G. S. Mineral Resources, 1905.
1906. Black Sand. Technology Quarterly, 1906.
Progress in Gold Milling in 1906. The Mineral Industry, XV.
Progress in Ore Dressing and Coal Washing in 1906. The Mineral Industry, XV.
1907. Relation of Mining School to Mining Industry. American Mining Congress, 1907.
Black Sand Discussion. Eng. and Min. Journal, 1907.
Settling Velocities of Quartz and Galena. Am. Inst. Min. Eng., 1907.
The Wilfley Table I. Am. Inst. Min. Eng., 1907.

ROBERT HALLOWELL RICHARDS
1868–1908

On the evening of Saturday, June 6, there was held at the University Club, Boston, a dinner in honor of Professor Robert H. Richards upon the completion of forty years' continuous teaching at the Institute. Invitations had been sent to past students of the Course in Mining Engineering

and Metallurgy, to the Executive Committee of the Corporation, to the Visiting Committee on Mining and Geology, to members of the Faculty whose appointments antedate the retirement of Professor Richards from the secretaryship, to his department colleagues, and to the classes of '68, '69, and '70; and letters and telegrams had been coming in from all corners of the United States, Canada, and Mexico.

About forty were present at the dinner, and speeches in praise of Professor Richards's work as a teacher, as an organizer of the Course in Mining Engineering and Metallurgy, as a perfecter of metallurgical processes, as Secretary of the Faculty, as first President of the Alumni Association, and, above all, as a man, were made by Mr. Munroe, '82, who presided, by Dr. Noyes, '86, Acting President of the Institute, by Professor Niles, by Colonel Livermore, Mr. Fish, and Hon. Eben S. Stevens, '68, of the Corporation, and by Professor Hofman, of the Department of Mining and Metallurgy. In the course of the evening, extracts were read from a number of the letters and telegrams which had been received, all of them unanimous in their expression of praise and affection. After the reading of these extracts, Mr. James P. Tolman, '68, on behalf of the many donors, presented to Professor Richards a hand-wrought silver bowl, made by Mr. Forssen, of the Society of Arts and Crafts, and inscribed around the rim, in Roman letters: ROBERT HALLOWELL RICHARDS—MASSACHUSETTS INSTITUTE OF TECHNOLOGY—JUNE, MCMVIII.—FORTY YEARS IN THE SERVICE. In response to this gift Dr. Richards (for he had just returned from receiving the degree of LL.D. from the University of Missouri) responded in a characteristically modest speech, which was received with great favor. The committee in charge of the dinner were Tolman, '68, Munroe, '82, and Morss, '85.

MRS. ELLEN A. KING

Mrs. Ellen A. King, the head of the Tech Lunch for seventeen years, will sever her connection with the Institute in June. A new steam turbine will be installed where the lunch room now is. This, with the moving of the Union into the New Union, makes it unnecessary to have two eating places.

At General Walker's urgent request a committee was appointed to undertake the starting of a lunch room. In the fall of 1890 the Women's Educational and Industrial Union undertook to run a lunch. At the end of the first year this was found to be unsatisfactory and it was decided to place the lunch room under the control of a committee of the Institute. Mrs. King undertook to run it and has run it ever since. In 1898 it was moved from where the mining library and offices in the basement of Rogers now are to its present location.—*From The Tech, April* 3, 1908.

The way to men's hearts is said to be through their stomachs. Tech men belong to the general type, but need further appeal, and must have their minds reached in order to be entirely won. As in all proper adjustment of affairs, supply meets demand, so at Tech the need of some one who would satisfy appetites and stimulate good fellowship was met when Mrs. King was secured, a good many years ago, to preside over the Lunch-room.

Mrs. King has always had the conviction that Tech men require and deserve the very best food that human skill can provide. She has been able to secure such food, and to offer it to the boys at a price rather lower than that of second class food anywhere else. This is remarkable, but it is less important than the second part of Mrs. King's service. She has possessed the rare faculty of creating and maintaining an atmosphere within the walls of the Lunch-room. The coffee houses of London were not more favored. She has

brought together student and teacher in a way most distinctly helpful to both. She has been a constant adviser and foster-mother of infant Tech-boards and class-day committees. There are men all through the land, from California to Maine, who will testify to her sympathy and encouragement to students struggling against severe obstacles at the Institute. Her interest in the students has never been confined to the satisfying of their hunger, but has manifested itself in a keen participation in their higher interests,—a participation almost maternal. Those who know it count themselves fortunate, and the great pity is that those who are now to enter Tech will not realize what is denied to them, for the Lunch-room will not have the same qualities again.

Another article in this same issue of the REVIEW deals with the plans for a new Lunch-room and Union, but it does not describe Mrs. King's last service to Tech, previous to her retirement this spring. When the Institute was embarrassed to solve the perplexing problem of new quarters for this important part of its service to the undergraduates, and had practically decided upon a rather unsatisfactory scheme, it was Mrs. King's wisdom and interest which discovered the present welcome solution of the whole question. So, as Tech loses her direct personal influence, it honors her long and faithful devotion to its interests by committing itself to her suggestion for the future of the Lunch-room and the Union.

WILLIAM ROGER GREELEY, '02.

THE EXETER STUDENT AND HIS COLLEGE

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

[Older alumni will get an interesting glimpse of the Institute, from the view-point of the undergraduate, from the following article, reprinted by permission from *The Phillips Exeter Monthly*, and written by a Junior at the Institute.]

For the Exeter student who seeks to equip himself for an active part in the development and application of science the Institute of Technology offers opportunities that cannot be duplicated. Chartered in 1861 for the "advancement, development, and practical application of science in connection with arts, agriculture, manufacture, and commerce," and opening in 1865 with an attendance of fifteen students, it stands to-day, with its superb faculty, its splendid curriculum, its high standard, and its excellent equipment, as the leading exponent of scientific education in the United States, with a reputation that is international.

The Institute offers four-year courses in Civil, Mechanical, Mining, Electrical, Chemical, and Sanitary Engineering, and in Architecture, Chemistry, Physics, Biology, Geology, and General Science, for the successful completion of which the degree of Bachelor of Science is conferred. For advanced work in graduate courses and original research of a high order the degrees of Master of Science, Doctor of Philosophy, and Doctor of Engineering are conferred. With the exception of the course in General Science and a few minor exceptions, a definite plan of studies is laid out for each of these courses, little besides the selection of a course being left to the option of the student. There can be no doubt that this system has given far more satisfaction than any elective system could have done. In purely academic institutions it has not been proved that the average undergraduate, when left to his own devices, will always select his course with the truest and wisest regard for his own best interests, and the faults of such a system would be enormously magnified

in a school of the scope of Technology. Therefore, having once determined the branch in which he is most interested, the student is confined with a fair degree of strictness to a course based, not on personal whim, dilettanteism, or a regard for ease, but on the educational and professional experience of men who have left lasting impressions on their respective branches of science or engineering.

Such an educational system as has been described has some interesting results. In the first place, nearly every student has chosen a subject in which he is intensely interested, and is following a course that he means to make the basis of the best work of his life. That it is a splendid thing to have a definite goal in view is no less true in a college course than in any other relation in life. Therefore, it is probably true that in no undergraduate body do the members have a stronger realization of their opportunities, a more earnest purpose, or a saner and sounder view of the proper relation between their studies and undergraduate activities than at the Institute of Technology.

Again, the following of a definite line of effort throughout the college course cannot but be a powerful impulse in character-building. It is this fact that gives the degree of the Institute its high value. The possession of a degree represents more than four years of residence, more than four years of fun and friendship, and more than four years of education: it stands for four years of determined application, of repeated endeavor, and of final attainment, and it is improbable that these influences shall not have had a powerful effect on character. It is this fact that makes the degree a testimonial of efficiency wherever scientific education is known.

It is commonly said that a course at Technology produces a man of narrow vision, of poor general education, and of capabilities limited to a single field. That a course which is in large part specialized may have this effect is undoubtedly true; but that it will have this effect on a man with any sense of perspective, with any of the tastes and ideals which a man cannot help gaining at Exeter, cannot be supported. The courses given have as their primary object the establishment of a broad scientific and mathematical basis for an education, the acquisition of the principles upon which

professional work is based, and the training of the mind in proper scientific methods of thought, technical skill being in all cases subordinated to these purposes. But it has always been the firm belief of the Faculty that the most efficient man, the most useful citizen, and the most creditable graduate must possess in addition both breadth of view and education. Since the foundation of the Institute, therefore, it has never been possible to obtain a degree without completing a considerable amount of literary, historical, and economic study. At present, courses in History, English, and Modern Languages are required of all regular students in the first and second years, and extensive courses in summer reading of English literature are required in the vacations following the first and second years. Third-year students are required to take courses in Political Economy and Business Law, and an additional course to be selected from an excellent list, including various branches of Literature, History, Modern Languages, and Economics. That many students do not appreciate the value of these courses, and neglect them to their own detriment, in no wise detracts from their worth. No Exeter man need ever fear that he will graduate at Technology without a firm, broad basis for a thorough education.

The second accusation commonly flung at the Institute is that the undergraduates are a "bunch of grinds,"—that their entire time and energy is devoted to their work; that they miss most of the fun and friendship and outside interest which make so large a part of college life. That this has a basis in truth for many students is but a natural outgrowth of the conditions of student life, the lack of a dormitory system, and the situation of the Institute; but how far it is from the actual truth may be shown by a rapid survey of the various student activities. Though not so numerous or so varied as in many colleges, and though the principal fault of the Technology student society is under-organization, these activities are as numerous and as highly developed as a proper regard for the curriculum would dictate, and the evils of under-organization are not so serious as some of the faults that characterize the highly over-organized student societies of some of our colleges.

The centre of the general social life at the Institute is the Tech

Union. Here, in a few unpretentious rooms, has been the meeting place of classes and clubs for dinners, smokers, reunions, etc., for several years. Great improvements are, moreover, in sight. Already larger and more comfortable quarters for the Union for next year have been obtained, and a large fund has been established by the alumni, to be used, when the permanent location of the Institute is more definitely settled than now, for erecting a large building, to be the home of the social life of the student body.

Other social organizations of less general significance are the fifteen national and two local fraternities, the Freshmen and Sophomore clubs, the Junior and Senior societies, sectional clubs representing many States and sections of the country and some foreign countries, and several preparatory school clubs. Among the latter the Exeter Club is easily the most active. With nearly thirty members, its annual dinners and smokers have been a source of much pleasure to all who have attended them. It is interesting to note that none of these clubs or societies has ever had the slightest effect on the absolute democracy that prevails.

Student publications include *The Tech*, a tri-weekly college newspaper; *Technique*, an annual that ranks among the best; the *Architectural Record*, a quarterly magazine, illustrating the current work of the Architectural Department; and the *Senior Portfolio*.

Among college dramatics, Tech Show ranks very high. The annual Show is written, text and music complete, by Technology students, and sixty or more men are given an opportunity to display talent in male and female rôles. Last year the Show, the book for which was written by an Exeter man, gave two performances at the Colonial Theatre, Boston, one in Malden, and one in Providence, R.I. This year two performances will be given at the Hollis Street Theatre, Boston, and one in Northampton, Mass. The profits of the Show are devoted to the support of athletics.

The Glee, Mandolin, and Banjo Clubs offer pleasant diversion for those musically inclined. Many short trips are taken throughout the year, and two Boston concerts and dances are given annually.

The religious life at the Institute is promoted by a strong, well-organized Young Men's Christian Association, working along prac-

tical lines for the promotion of Christian fellowship and service among the students.

Almost all branches of athletics are represented at Technology. Football and baseball are confined to class teams of the two lower classes, as it is felt that too much time would be required for training 'varsity teams in these sports. But Technology meets other colleges in track, cross-country, basket-ball, fencing, hockey, tennis, and golf, and in spite of the many difficulties connected with training teams the Institute has succeeded in developing an absolutely clean, honest, healthy, and healthful system of athletics.

The social event of the year is Junior Week, occurring in the latter part of April. Together with the Junior Prom, the Show performances, the Musical Clubs' concert, the Technique Rush, and numerous teas, receptions, etc., afford highly prized relaxation, and prove beyond a doubt that Tech is far from being "one dem'd, horrid grind."

Of course here, as elsewhere, are many students who take no part in these activities,—probably more than elsewhere; but among these Exeter men are never found. The appreciation of friendships and associations, of the substantial pleasures and benefits to be derived from "rubbing elbows" with one's fellows, is one of the many valuable possessions that a course in Exeter gives. It has been shown at Technology by the fact that Exeter men have been at all times leaders in every phase of student life. A single instance will illustrate this. In the graduating classes of 1907 and 1908 every Exeter man was elected to the Class Day Committee of twenty-five, and of the three marshalships, the highest class honors, two went to Exeter men in 1907, and one in 1908.

And so to the Exeter man, perhaps more than to any one else, Technology offers the best of training for a fascinating career, an excellent foundation for a broad general education and a sane college life, with enough of pleasure and of work to make both fully worth while.

MAURICE R. SCHARFF, '05 (Exeter); '09 (M.I.T.).

A REQUIRED COURSE IN PHYSICAL TRAINING

It is proposed to inaugurate next year a regular course in physical training for first-year men at the Massachusetts Institute of Technology.

The recognition of physical education as a legitimate part of college training has been growing very rapidly in our American colleges. While in 1900 there were only twenty-one colleges in the United States which were giving credit as a part of their regular curriculum for the work in physical training done by their students, in 1906 there were fifty-seven colleges and universities which demanded such training as a part of the requirements for their degree. Among these colleges may be mentioned Cornell, Columbia, the University of Illinois, Johns Hopkins, Leland Stanford, Jr., Northwestern University, the University of Pennsylvania, and the University of Wisconsin. Among the colleges in our vicinity making this requirement are Amherst, Brown, and Dartmouth. In all of these colleges the requirement is the same for students in the scientific and engineering courses as for those in the academic courses. In most of them participation in athletics is regarded as an equivalent for gymnasium instruction. At Cornell, for instance, work on the University athletic teams is reported weekly to the Director of the Gymnasium. A physical examination is required of all students upon entering the University and at the beginning of each season's training for athletic work.

At the Massachusetts Institute of Technology gymnasium instruction has been provided for many years for those students who cared to apply for it, a competent instructor having been in charge. The old gymnasium on the land of the Boston & Albany freight yard was first employed as a drill hall, and was afterwards used for gymnasium classes and as winter training quarters for athletic sports. When it became necessary for the Boston & Albany Railroad to use the property leased to the Institute, the Corporation of

the latter decided to erect a gymnasium near the Mechanical Laboratories on Garrison Street. This new building was completed in 1906, and is a plain, commodious, well-lighted building, which is used for both gymnastic and athletic training.

At the suggestion of President Noyes members of the first-year class were asked at the beginning of the last school year to present themselves at the gymnasium for a physical examination. This examination was given by Mr. Towne, the Instructor in Gymnastics, to two hundred and seventy-five first-year men. Anthropometric charts were plotted which showed clearly to each student the comparison of his development with that of the normal type of student of his age and height. All students who were found to be below the normal were urged to take regular instruction. Classes were formed, and quite a large number of men started in on the work, but, as the exercise was entirely optional and was not felt by them to be a matter in which the Faculty was interested, the attendance soon began to fall off, and towards the end of the year there were perhaps not more than fifteen or twenty men present at an exercise. Those who did attend gained something from the work, and two of the men were awarded the Cabot Medal for Improvement in Physical Development.

In May, 1908, a committee of the Faculty was appointed to consider the advisability of having some compulsory form of gymnastics for first-year students, and below are given abstracts from their report:—

"It is the belief of the Committee that, if prescribed work in Physical Training should be introduced, it should be based upon somewhat the same educational ground as instruction in General Studies. It is important in the education of an engineer that he understand the relation of bodily health to intellectual activity and the need of physical exercise as a means of maintaining health. In these matters most of the men entering the Institute are comparatively ignorant. . . .

"During the first five weeks of the term five introductory lectures will be given to first-year men. These lectures will include such subjects as the special need of physical training for Institute students;

bodily health and the relation of exercise to health; matters of personal hygiene; and the special value of gymnasium training. During these first five weeks each member of the first year class will be given a physical examination from which an anthropometric chart will be plotted. For the remaining ten weeks of the first term and the first eight weeks of the second term regular periods of gymnasium work will be required. There will then be a second physical examination for the purpose of comparing the physical condition of the student with his condition at the beginning of the year. . . .

"In connection with this course a Standing Committee on Physical Training might well be established, including as *ex-officio* members the Dean, the Physical Director, and the Medical Examiner, and two Faculty members, this Committee having the power to deal with applications for excuse from gymnasium work. Excuse from gymnasium work may well be granted to men over twenty-one years of age (except in special cases); to men living at such a distance from the Institute that the requirement would prove too great a hardship; to men who are taking regular athletic work under the direction of the Coach hired by the Advisory Council on Athletics; and to others who can satisfy the Committee that they are in good condition and taking care of their health by some approved habits of exercise and some intelligent and systematic course in hygiene. Applications from men in the last two classes should be considered individually by the Committee. . . .

"The Committee is of opinion that the regular hours for gymnasium work should be placed upon the tabular view, and that records of the standing of the students should be reported with the other marks at the semi-annual and final examination periods. The ratings might be in terms of Pass, Deficient, and Fail."

After discussion and a modification of some of the minor details the recommendations of the Committee were finally accepted on May 20, 1908. The Faculty intends by this action to emphasize the value of physical training as a part of the education of an engineer.

ALFRED E. BURTON.

A NEW PLAN FOR FIVE-YEAR COURSES

The normal length of the Institute course has been from its foundation four years, and this standard has been maintained by the Faculty in spite of the steadily increasing material for instruction. On the other hand, the number of students who, for one reason or another, devote five years to the completion of the course is not inconsiderable. Even before General Walker's presidency, and later with his active interest, the needs of such students were carefully studied, and five-year courses were laid out in most of the professional departments, the administration of these courses being placed in the hands of a standing committee of the Faculty. In general, the plan involved postponement of chemistry from the first year to the second, and of physics and certain professional subjects from the second year to the third. This plan worked fairly well for some years following its adoption, at least for the larger departments with curricula then relatively simple. On the other hand, any person familiar with the Institute program will readily appreciate that it was a matter of no small difficulty, after the "tabular views" for four-year students were worked out to make the necessary interlocking adjustments for five-year students, who must combine (except in their first and last years) subjects of two or more different years of the four-year program. These adjustments were rarely, if ever, indicated on the printed tabular views. Second-year students occasionally received hints as to how to include first-year chemistry, but beyond this the five-year student was under the necessity of making his own tabular view, which, doubtless, afforded valuable training, but diminished the theoretical time-saving of his plan. Again, the standing committee of the Faculty, after carefully working out a set of five-year course schemes, would find all its results upset by changes in the underlying four-year programs, to say nothing of the endless complications attending transition from an old program to a new one. Still further, a

student desiring to take mining engineering or chemistry—for example—was at a material disadvantage by reason of postponing chemistry. The accumulated effect of these circumstances has come to be, with the increasing complexity and differentiation of the professional courses, the practical atrophy of the whole plan. In recent years, at any rate, students have rarely taken five-year courses voluntarily, and the Faculty provision has proved to be little more than a kindly discrimination in favor of certain relatively deserving, special students desiring to be classed as regular. It is needless to add that, if students had sought to take advantage of the formal provisions of the plan in any considerable number of departments, the consequences in the requirement of additional instruction would have been serious, if not indeed prohibitive.

The new plan recently adopted by the Faculty aims to meet the inherent difficulties of the situation as outlined above, and at the same time to serve the needs, not only of students who wish to take the regular Institute course more deliberately, but also of those who desire to take in addition either the professional work of a second allied department or a larger proportion of general studies. The essential features of the plan are: first, the postponement of any differentiation for five-year students until the beginning of the second year; second, the distribution of the remaining work of the course in question over four years instead of three; third, the offering of definite programs in civil, mechanical, and electrical engineering only, the Faculty committee undertaking to facilitate similar arrangements for students in other departments, without, however, guaranteeing a feasible tabular view.

Some of the advantages of the plan are a somewhat higher standard of scholarship, represented by the requirement of the full first-year work; the restriction of tabular-view difficulties arising from the combination of work of different years to the third and fourth of the five years; the opportunity for the student to test his need of a fifth year by taking full work for one year; and the opportunity during that year to confer with members of the Faculty on the questions involved.

It has been stated already that the new plan is designed to attract students who wish to complete the work of two professional departments or of those who wish to combine with the professional work of one department a larger proportion of general studies. While neither of these tendencies is likely to become very general in the immediate future, both of them are deemed by the Faculty worthy of encouragement. Many a man finds after graduation that personal circumstances, or industrial changes, or the increasing interdependence of different forms of engineering, render it highly advantageous for him to have a wider range of professional training than can be included in a single course. Thus a mechanical engineer may need more electricity, a mining engineer more geology, or a naval architect more mechanical engineering. The need has been met in the past, to some extent, by a graduate spending a fifth year devoted entirely to the professional work of a second department, but this combination of professional subjects normally distributed over a long period within the limits of a single graduate year is often unsatisfactory. Under the new five-year plan a better blending of two allied courses can be planned and carried out from the beginning. Moreover, a student may complete one course and a considerable part of a second, receiving the degree only in the first.

The bearings of the plan on the needs of students who may choose to devote the time gained to a larger proportion of general studies are of more than ordinary interest. In the face of continually increasing professional demands the Faculty of the Institute has resolutely adhered to the policy of making its degree represent a broad and thorough general scientific education, with a moderate proportion of technical studies not too highly specialized. In obedience to this principle all regular students receive substantial instruction in English composition and literature, history, economics, and modern languages, so that the Institute graduate has had a broader education in these academic studies, not to mention the fundamental sciences,—mathematics, physics, and chemistry,—than may be required of candidates for the bachelor's degree in colleges where the principle of free election is dominant. The effect of the new five-year plan for students of

the group under consideration is to enable them to take a considerably larger proportion of these and other elements of general education than is possible within the ordinary four years. Whenever the number of students selecting this plan warrants it, it may also be expected that new courses in such general subjects as the various branches of natural and physical science and in the history of science may be introduced.

H. W. TYLER, '84.

THE NEW "TECH UNION"

In an article on the New Tech Union in the April number of the REVIEW it was suggested that a part of the Grundmann Studio Building might be used. Further investigation, however, showed that, at slightly increased expense, there might be constructed a new building which would far better serve the needs of the students for a general dining hall and meeting place. Therefore, after careful consideration, the Executive Committee of the Corporation decided to erect such a temporary building, provided the main part of the cost could be secured by private subscription.

The work of construction is to begin immediately, and it is hoped to have the dining-room ready for occupancy at the beginning of the fall term.

The space between Pierce and Engineering C is to be entirely covered, and the "Union" is, outwardly, a continuation of the latter building. It comprises two stories, as follows:—

A basement at the level of the present Lunch-room, forming a new lunch-room, large enough to accommodate about 250 diners at a single sitting. The space occupied by the present kitchen and east end of the lunch-room is rearranged to accommodate the new kitchen, store-room, refrigerator-room, and serving-room.

The large entrance to Engineering C on Trinity Place is to be utilized as the main entrance to the new building, stairs going down to the lunch-room and up to the second floor, which is to contain a large lounging-room with fireplace and all the comfortable furnishings and trophies that make a college room attractive, a coat-room, toilet-room, and two large rooms which can be used for committee rooms or dining-rooms, as may be desired, so placed as to be served conveniently from the kitchen below. In case of a demand for further accommodations the gymnasium of the Margaret Cheney Room is available for a small dining-room, and room 11 Pierce for another large dining-room.

Above the lounging-room will be a small mezzanine floor, which will afford room for two or three offices or committee rooms.

These accommodations are calculated to provide for the student a convenient and attractive place for lounging, committee meetings, reading, or studying, for class and society gatherings, and for dinners. And it is hoped to give them, besides, three good meals every day.

WILLIAM ROGER GREELEY, '02.

AN IMPORTANT COMMITTEE ON ENGINEERING EDUCATION

At the last annual convention of the Society for the Promotion of Engineering Education the retiring president introduced resolutions which were adopted by the society, and which invited the leading national societies in the engineering branches to co-operate in the appointment of a Joint Committee to study engineering education. The resolutions invited each of the several societies to appoint two members of a Joint Committee, while the Society for the Promotion of Engineering Education should itself appoint three members. The resolutions pointed out the desirability of making a comprehensive study of the objects and the utilities and the correct ideals of engineering education, and laid upon the Joint Committee the duty of examining into "all branches of engineering education, including engineering research, graduate professional courses, undergraduate engineering instruction, and the proper relations of engineering schools to the secondary industrial schools or foremen's schools." And the resolutions further laid upon the Joint Committee the duty of formulating a report or reports "upon the proper scope of engineering education and the degree of co-operation and unity that may be advantageously arranged between the various engineering schools."

When the resolutions were adopted, it was hoped that this committee might be promptly formed, and that its final report might be made within two years, but such a degree of co-operation between the societies had never before been secured, and it was soon found that an extended period would be consumed in forming the committee. The somewhat onerous duty of bringing the matter to completion fell to the writer on account of his responsibility for the resolutions. The resolutions were adopted on the last day of a convention held during the first days of July, 1907, and the governing boards of the professional societies invited to participate ordinarily have no meet-

ings during the months of July and August. It was also later found that certain societies were not able to act through their governing boards, and the appointments of certain members of the Joint Committee were therefore delayed until after the opening of the year 1908. One of the societies involved held its meeting at which the members were appointed toward the latter part of December, 1907, and the last members were appointed during March, 1908.

The societies invited to join in appointing this Joint Committee are the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Institute of Mining Engineers, the American Institute of Electrical Engineers, and the American Chemical Society, each of which societies has designated two members to act on the Joint Committee; and the Society for the Promotion of Engineering Education has appointed three members.

The oldest and most comprehensive of these societies is the American Society of Civil Engineers, and its representatives on the Joint Committee consist of two eminent past presidents, Mr. Desmond FitzGerald who is chairman of that society's Committee on Engineering Education, and Mr. B. M. Harrod. The American Society of Mechanical Engineers appointed two very distinguished members: one a past president, Mr. Frederick W. Taylor, and the other Dr. Alexander C. Humphreys, president of Stevens Institute of Technology. Two past presidents, who are men of great distinction in the mining and metallurgical fields, were designated on behalf of the American Institute of Mining Engineers,—Professor Henry M. Howe and Mr. John Hays Hammond. Two past presidents were likewise appointed by the American Institute of Electrical Engineers: the recently retiring president, Professor Samuel Sheldon, of the Brooklyn Polytechnic Institute, and Mr. C. F. Scott, who is notable as having been an originator of the plan which resulted in the gift of a million and a half dollars for the building for the engineering societies in New York. Mr. Scott is a member of the special Educational Committee of the society which he represents. The American Chemical Society appointed two men who take an untiring interest in educational affairs: Professor Henry P. Talbot, of the Massachusetts Institute of Technology, and Mr. Clifford Richardson,

of New York. The society for the Promotion of Engineering Education appointed Professor C. L. Crandall, of Cornell University, Professor James M. White, of the University of Illinois, and Professor Dugald C. Jackson, of the Massachusetts Institute of Technology.

The resolutions for the appointment of this Joint Committee seem to have been particularly timely. Considerable discussion of the merits and demerits of engineering education has recently been running through the engineering fraternity, and it has entered into the meetings of the professional engineering societies. The best friends of the engineering schools have exhibited a good deal of discontent with the results accomplished,—vaguely expressed discontent, to be sure, but only to be met by a positive and frank effort to find means for improvement. The American Society of Civil Engineers appointed a special committee to study the problems of engineering education at its last annual convention held in July, 1907, at the City of Mexico. This committee was appointed as the result of a letter ballot of all the members of the society, which was taken in response to resolutions introduced at the annual convention held a year earlier. The American Institute of Electrical Engineers passed resolutions at its annual convention of 1907, proposing the appointment of a committee to study electrical engineering education, almost simultaneously with the convention of the Society for the Promotion of Engineering Education; and various members of the American Chemical Society and the American Society of Mechanical Engineers were discussing and urging the appointment of similar committees by their societies. It is obvious that a Joint Committee representing all the aspects of engineering can be much more serviceable to engineering education, and can make a much more valuable and authoritative report than would be possible for a committee viewing only a single branch of the subject, and that the various committees of circumscribed view might perhaps make reports based on insufficient study, and the net result might be without much advantage to the cause at heart. The now fully formed Joint Committee will have the prestige behind it of all five of the great engineering societies, and will have the advantage of viewing the subject from every aspect in the several branches

of the profession. It will also enjoy the aid of the special committees of the several societies.

Two members of the Joint Committee are also members of the special Committee on Engineering Education of the American Society of Civil Engineers, one being chairman of that committee; and two other members of the Joint Committee are members of the special Educational Committee of the American Institute of Electrical Engineers. Other members of the Joint Committee have been looked up to in their respective societies as representing the best views on education, and have been the centers of the agitation for the appointment of committees on education. It is manifest that the Joint Committee represents the best educational impulses of each of the professional societies.

As illustrating the fact that the leading men in the engineering profession are now coming to give much attention to the problems related to engineering education, it is impressive to observe that the thirteen members of the Joint Committee are all but one mentioned in the book known as "Who's Who in America," and a considerable number of them are named in the compilation called "American Men of Science." Of the thirteen members of the committee, nearly one-half have received the degree of Doctor of Science or Doctor of Philosophy. Three members are graduates of Harvard University; two are graduates of the Massachusetts Institute of Technology; three or more spent a period of graduate study in foreign engineering schools or universities; two members are graduates of or have spent a period of graduate study at Cornell University; and two are graduates of Stevens Institute of Technology. A graduate of Sheffield Scientific School, a graduate of Ohio State University, a graduate of the University of Illinois, and a graduate of Pennsylvania State College complete the representation of the various engineering schools whose graduates compose members of the committee. The committee includes one member of the Faculty of the University of Illinois, one of Cornell University, one of Columbia University, one of Brooklyn Polytechnic Institute, and two of Massachusetts Institute of Technology, besides the president of Stevens Institute.

A number of the members of the Joint Committee appointed by

the professional engineering societies are on the faculties of engineering schools, in addition to the three members appointed by the Society for the Promotion of Engineering Education, but in these instances the men are also consulting engineers or advisers in engineering matters. Several other members of the committee are counted among the most distinguished practising engineers in their respective branches. A balance is thus obtained in the membership which promises a remarkably thorough study of the important questions which lie in the province of the committee, and augurs well for an influential report.

It has been proposed to carry on the work of the committee by holding a series of conferences, including the most notable teachers in the branches related to engineering, even though these men do not have membership in the committee. This would be following a plan somewhat like that so fruitfully used some years ago by the Committee of Ten on Secondary Education which was appointed by the National Educational Association. The committee is expected to spend not less than two years in the study and formulation of its report.

DUGALD C. JACKSON.

THE NEW RESEARCH LABORATORY OF APPLIED CHEMISTRY

One of the purposes for which the Institute of Technology was incorporated, as expressed in its charter, was that of aiding in the *practical application of science in connection with the arts.* This aid it has ever given most generously in the form of its graduates,—men broadly educated along those lines which make for general usefulness. It has also aided in the application of science to the arts through the many contributions which the members of its Faculty have made in the way of the published results of investigations carried on by them.

A more direct though, doubtless, a more limited sphere in which the Institute can apply science to the arts, lies in the organization of a laboratory for research, whose chief function it will be to investigate by purely scientific methods some of the many problems which confront the industries of to-day. A number of the large manufacturing companies have already started such research laboratories for themselves for the study of the problems most directly affecting their own interests. But in the Faculty of the Institute we have a corps of experts such as no one organization can hope to command, whose services in a consulting capacity may be drawn upon for the solution of such industrial problems. It should be possible therefore, by a proper plan, to take up for investigation not only problems of general interest, but also the particular difficulties of individual manufacturers, in such a way that the splendid facilities of the Institute and the expert knowledge and experience of its Faculty may be made to serve most directly the community at large, without in any way interfering with the present work of either.

Such an organization the Corporation of the Institute has recently established, to be known as the Research Laboratory of Applied Chemistry. For the present it will be located in 52 Pierce Building, the large room formerly used exclusively for laboratory work in

Textile Coloring. Its proximity to the Laboratory of Industrial Chemistry will render available for experimental work the very complete equipment of that department and thus avoid a duplication of expensive apparatus. Room 50, Engineering B, will be used as a shop, and will be furnished with a full line of the machines and tools necessary for constructing experimental apparatus. It is confidently expected that in the study of any particular problem no difficulty will be met in obtaining the co-operation of manufacturing concerns, to such an extent that their plants will be available for carrying out the more nearly completed investigations on a scale sufficiently large to determine the ultimate success of the work.

Although it is expected that the work carried on by the Laboratory will deal with the application of science to the arts, it is intended that the problems selected shall be attacked in a fundamental way, and that only the most improved methods of scientific research will be employed in their solution. A few advanced courses and seminars will be given by the members of the research staff throughout the year. The Laboratory will therefore contribute to the facilities for instruction at the Institute, and it is hoped that advanced students of a high grade may be attracted. The REVIEW will in a subsequent number discuss more at length the plans of the Laboratory and the field of research which it will hope to cover.

WILLIAM H. WALKER.

JUNIOR WEEK

"Here we are again back to work, and, as we limp up Rogers steps, after seven days and nights of giddy social whirl, the question is forced upon us whether, after all, Technology isn't gay enough for any one. Tech loosens up seldom, but, when it does, it certainly makes a noise." These opening words of an editorial in *The Tech*, summing up the success of Junior Week, 1908, express adequately and vividly the fact that the week of festivity this year more than reached the standard set by former Junior Weeks.

Owing to the fact that the official vacation came on the first three days of the week, beginning April 20, dates for the various events were somewhat confused, and had to be spread over a period of seven days.

CLEOFAN RECEPTION

The annual reception of Cleofan started the game on Thursday afternoon, April 16, in a way that has not been equalled in years. Its membership includes practically all the co-eds at the Institute. The patronesses were Mrs. Harry M. Goodwin, Mrs. Robert H. Richards, Mrs. Dugald C. Jackson, Mrs. William B. Rogers, Mrs. Thomas A. Jaggar, Jr., Mrs. Charles W. Sawyer, Mrs. Frederick T. Lord, Mrs. Charles A. Stone, Mrs. Stanley McCormick, Mrs. Henry P. Talbot, Miss Susan Minns, Mrs. Francis A. Walker, Mrs. Henry G. Pearson, and Mrs. George Wigglesworth. Miss Minns, Mrs. Talbot, Mrs. McCormick, and Miss Ruth Maxwell, president of Cleofan, received.

"TECHNIQUE, 1909"

Two hundred and fifty men from the different classes engaged in the free-for-all fight and rush for *Technique*, 1909, behind the Art Museum on Saturday, April 18, at 1.05 P.M. The first twenty copies contained the signature of President Noyes on the fly-leaf,

and were numbered in gold on the cover. Hundreds of spectators, including many guests, thronged the surrounding streets and filled the windows of the Engineering Buildings.

J. H. Ruckman, '10, emerged from the fighting mass of men with the first book under his arm, and was quickly followed by G. T. Glover, '08, H. J. Ruggles, '08, P. R. Powell, '08, and C. H. Campbell, '09, with the remaining four of the first five copies, which were given free of charge. The other men to receive numbered copies were R. W. Parlin, '08, R. W. Ferris, '08, L. W. Thurlow, '08, A. Hague, '10, A. K. Huckins, '10, F. M. Heidelberg, '09, H. E. Allen, '08, C. E. Creecy, '10, W. G. Harrington, '10, N. S. Seeley, '10, A. H. Curtis, '10, J. F. Davis, '09, B. Barrow, '10, and M. L. Bullard, '08.

With regard to *Technique*, 1909, the following quotations from the reviews written by members of the board of editors of *The Tech* are quoted.

The first, which concerns itself with the literary part of the book, was written by Channing Turner, '08, and Henry W. Hoole, '08, and says:—

Distinctive from cover to cover *Technique*, 1909, is a year book that will stand separate from all previous books for its excellent cover, typography, paper, and many original features. The first impression given by the volume is that here is a *Technique* which comes up to the standard of those published by 1903 and 1904. This impression is weakened as some of the faults appear upon turning the pages; faults which, however, in greater part are not due to any carelessness or ignorance on the part of the board, but rather to the engraver and printer together with the smallness of the editorial force.

Throughout there is a great variance in method of paging, makeup, and general arrangement, passing from high excellence to the poorest sort of book-making. Page after page is carefully laid out, with one interspersed so poorly arranged that it spoils the general good effect. In greater part the typography is of the quality usually associated with the name "University Press," but there are places where the alignment is extremely poor, and the type used is not either in taste or good form.

That the book contains some eighty odd pages more than last year's

Technique is hard to believe, for the volume is much thinner, due to the thinness of the paper. The paper itself is of a high finish that brings out in a beautiful manner the half-tone cuts, engravings, and color cuts, a great improvement over that used last year. . . .

The book opens with a dignified dedication to Arthur Amos Noyes, Acting-President of the Institute, with none of that high-strung, frenzied manner that has so characterized dedications of previous *Techniques*. The photogravure of Dr. Noyes is good, a perfect likeness. The life of Dr. Noyes is well written, with emphasis on the essentials, and well worth the reading of every Tech man. *Technique*, 1909, was fortunate indeed to have such a man to whom the book could be dedicated.

The first and finest piece of literary work in the book is the Foreword. Surrounded by a frame in perfect accord with the words, the whole page voicing the spirit of the best Technology, this Foreword is worthy of more than passing attention. It follows:—

"To thee, O Tech, we raise our hearts!
We know thy griefs, thy joys, thy moods
As sons alone thy ways can know.
Then help us, Tech, now to record
The year that's passed, the time that's flown,
So that thy loyal sons may own
A treasure book of memories dear
In which they may when aged gray
The past in fond remembrance see
And in their life's autumnal day
Be young again, O Tech, with thee."

In looking over the book after the examination of the details, the feeling still remains that 1909 *Technique* is a good book. Its faults are glaring, but not so great in number as in the past three *Techniques*. As in the case of the art work, the faults are intensely bad, rather than numerous. *Technique*, 1908, was almost a good book, while that of 1909 is a good book with drawbacks. This may seem indefinite, but to those who know about *Techniques*, that of 1909 can be placed in the class with that of 1905, while the 1908 *Technique* has two faults, the cover and the paper, which thoroughly spoiled it. The 1909 board is to be congratulated in this regard, the makeup of the volume giving a very good impression, while the cover and tint and texture of paper are excellent and distinctive.

The criticism of the art work, by W. Fred Dolke, Jr., 1908, says in part:—

The art work of *Technique*, 1909, as a whole, gives an impression of being highly original in its ideas—much more so in many ways than is true of former *Techniques*. But this originality has unfortunately been fatally ruined by faulty execution in the case of many of the drawings and by poor color in cases where the drawing is excellent.

In many headings the idea expressed is original and extremely interesting, but the execution is rough and coarse to the point of grammar school art, the effectiveness and the pleasing qualities of the design being consequently lost.

That this is true is unfortunately over-emphasized by the startling contrast that exists between the first few pages of the book and those that follow, this contrast being again brought forward by the excellent color plate for the "Finis" of the book. In general, throughout the book, a drawing is good or it is very bad. . . .

In spite of all the faults evident in the execution of the drawings, the art editors of *Technique*, 1909, are to be congratulated on the manner in which they have boldly and courageously been original in many of their ideas. It may be that this very originality leaves a bad impression as to the standard of excellence of the art work, but it is evident, after a careful and thorough survey of the book, that the designs which are truly original in conception are best in execution.

Much of the art work that is poor is due, no doubt, to the fact that the art editors worked under the great handicap—a handicap felt in this department possibly more than in any other except the business—of the lack of time which disorganization of the board at the beginning of the year occasioned.

MUSICAL CLUBS' CONCERT AND DANCE

In the most successful concert in years the combined Glee, Banjo, and Mandolin Clubs covered themselves with glory on Monday evening, April 20, at the New Century Building. The programme was cleverly carried through, and every number offered was encored to the echo. The matrons were Mrs. C. Frank Allen, Mrs. Harry E. Clifford, and Mrs. Dugald C. Jackson. Gardner, Coleman,

Sharp, Hield, and Caldwell made up the reception committee. The ushers were C. W. Radford, '08, head usher; Ralph Walters, '08, C. J. Belden, '09, W. McN. Schofield, '10, W. J. O'Hearn, '10.

TECH SHOW

With a swing and a dash that was surprising when it is considered that the players were amateurs, the performances of this year's Tech Show, "Over the Garden Wall," at Northampton, Mass., Saturday evening, April 18, and at the Hollis Street Theatre, Tuesday and Thursday afternoons, April 21 and 23, were carried through in a manner seldom seen in other than professional productions. The hits were made by Rinker Kibbey, '08, as "Professor Buggs," just escaped from the Danvers Asylum, C. C. Hield, '10, as "Bob Wilmerdine," the hero, in his various songs, and S. A. Malcom, '09, as Bob's uncle.

Of Kibbey's work Mr. Greenough, dramatic critic of the Boston *Transcript*, said:—

> Mr. Kibbey's crazy Professor Buggs is a creation which deserves to take rank with William Norris's Partridge in "Tom Jones." Kibbey, in fact, has many of Mr. Norris's quaint characteristics. His make-up was perfect, his conception of the character truly comic and admirably displayed. He took the part at just the right tempo, brisk, impetuous, ever reaching forward in search of "The Eternal It." There was a laugh in every line of his one freakish utterance. He sang his one song effectively, and his dancing was as droll and original as that of Norris and the late Dan Daly combined. The professional stage could make rare use of Mr. Kibbey.

For the first time in years there has been a real story to the Show. It had been thought that by a plot the sprightliness of the Show would be destroyed. G. C. Westervelt, '08, the author, Coach Francis, and the principals have disproved this theory. "Over the Garden Wall" has its disconnected specialties, dances and songs, connected by a story with an interest of its own. The local hits were few in number, but fine in quality.

As showing the drift of Tech Show towards an ideal Technology production, the following quotations are made from the review written for *The Tech* by Professor H. L. Seaver, of the English Department:—

It is a pleasure to review one's impressions of an amateur performance so good that it stands well any general comparison with others in a long series of creditable Tech Shows. That of this year does not seem to me to fail of the high standard set in previous seasons. In some details earlier shows have been better, in a few others this sets, I think, a new standard, though no show has yet, I am sure, found all the fun that might be derived from a performance of this kind. . . .

The book of the show has—wisely, we must all agree—not departed from the traditional show plan,—and by a "show" I mean a performance without any dramatic pretensions, but a thread of story upon which to string solos, duets, choruses, jokes, and dances which may give the widest chance to any and all the talents to be discovered in the entire undergraduate body. That more could be made of the story,—"plot" would be, perhaps, too pretentious a word,—I still believe; much amusement might be got from the simplest complications of surprise and misunderstanding. These elements would call, I think, for no capacities of acting more than our principals could supply; yet no libretto of any Tech show yet has resorted to either, to increase the amusement or tie up snugger the whole merry jumble of separate "features."

The scene chosen by the libretto is, also wisely, local; yet only nominally so. To keep to familiar scenes means a great advantage in the greater possibility of natural acting,—as witness Mr. Schofield's Freshman of two years ago; but the books of the later shows, which have so well avoided extravagancies of setting, haven't taken advantage of the opportunities for local burlesque. As far as satirical or "topical" amusement is concerned, the present "Fraternity house on Newbury Street" might as well have been in the moon; and when the stage set appeared of the "Street in Brookline," I almost expected to see Sir Henry Irving's marvellous Jew harrying his merchant to the jail in Venice. In the dialogue and in the songs, similarly, little was given of locally comical significance,—the "Professor's" song being, perhaps, the nearest approach. (Not so good, by the way, as that idyllically misconceived lyric of the undergraduate Muse named "Petition the Faculty," in an earlier show.) The enthusiasm of delight and applause that welcomed the few pleasantries about the local restaurants or street

scenes or Institute teachers shows how grateful more of that kind of fun would be to an audience mainly of Technology people, very ready to laugh and to be laughed at.

JUNIOR PROM

The Junior Prom was held on Tuesday evening, April 21, at the Hotel Somerset, with four hundred dancing. Dancing began shortly after nine, and lasted until supper at 11.30, after which it was resumed until 3 A.M. The matrons were Mrs. Curtis Guild, Jr., Mrs. Samuel J. Mixter, Mrs. William T. Sedgwick, Mrs. George Wigglesworth. The patronesses were Mrs. J. L. Batchelder, Mrs. A. E. Burton, Mrs. F. W. Chandler, Mrs. H. E. Clifford, Mrs. Desiré Despradelle, Mrs. D. C. Jackson, Mrs. J. P. Munroe, Mrs. Dwight Porter, Mrs. Geo. F. Swain, Mrs. Henry P. Talbot, Mrs. Frank H. Rand.

This year's Prom committee was composed of Carl W. Gram, Alton Dickerman, Charles J. Belden, Chester H. Pope, Walter W. King, Raynor H. Allen, and Arthur L. Shaw.

ARCHITECTS' RECEPTION

Thoroughly Bohemian in its clever, original decorations, the Architectural Society reception and exhibition on Wednesday, April 22, in Pierce, was a great success.

Greeting the guests on their arrival was a clever poster, saying, "You are on the Right Road to the Architects' Reception," and other cartoons and sketches helped them upstairs. At the top was a cartoon of "Herr Professor" Despradelle and a sketch of a goat's head with the advice—"Butt In."

Around the drawing-rooms were placed architectural drawings illustrating the work of the different classes, livened up by some humorous sketches and large silhouettes of the Seniors in the department.

The guests were ushered into the architectural library by the reception committee,—Kurt Vonnegut, '08, R. J. Batchelder, '08,

C. I. Youngman, '08, Rinker Kibbey, '08, J. M. Hatton, '08, and A. M. Menke, '09. The matrons who received at one side of the library were Mrs. William Barton Rogers, Mrs. Henry P. Talbot, Mrs. Allen H. Cox, Mrs. Harry Goodwin, Mrs. Stanley McCormick. On the other side of the room Miss Helen McGraw Longyear, '09, and Miss Rebecca Hall Thompson, '09, poured tea. After the reception some of the guests stayed to an informal dance.

W. Fred Dolke, Jr., '08.

SENIOR WEEK

Senior Week, 1908, will undoubtedly go down in the history of the Institute as a red-letter week, owing to the innovations made in the part of the programme which more especially affects the alumni. The reception given by the alumni to the members of the graduating class was this year done away with, and the class given a more glorious reception than usual at Tech Night at the "Pops." Also the customary class dinners on graduation day were changed to class spreads, all given in the Hotel Brunswick. The 1908 men were guests at these spreads, and a greater opportunity was given for the alumni to meet one another.

SENIOR DINNER

As has been the custom in former years, the annual Senior Dinner at the American House, Thursday evening, June 4, inaugurated the Senior Week festivities. Unlike former years, however, the graduation notices were not given out at the dinner, and the speakers were all members of the class. After the dinner almost the entire party, headed by some of the more enthusiastic members on the top of a cab, marched to Rogers steps, where a few of the graduation notices, which had been secured from the Back Bay post-office, were given out.

Samuel H. Daddow acted as toastmaster. Professor Breed was discovered in the hotel in the course of the evening, and was carried bodily into the banquet hall, where he made a short speech. Harry Rapelye, the class president, and John Tobin, who was elected class secretary, both boomed the Alumni Association and the REVIEW. The other speakers were Harry Webb, Arthur S. Douglass, Lafayette B. Hedge, Basil L. Gimson, Horace E. Allen, Francis H. McGuigan, and Herbert T. Gerrish.

MUSICAL CLUBS CONCERT

On Saturday evening the Glee, Banjo, and Mandolin Clubs gave a concert to the Seniors and their friends in Huntington Hall. An excellent programme was furnished, and the members performed exceptionally well, each number being encored several times.

BACCALAUREATE SERMON

That the aim of the members of the graduating class on entering the world should be service to others, and that they should use their influence always for the good of the community, was the theme of the baccalaureate sermon delivered by the Very Rev. Dr. George Hodges, dean of the Episcopal Theological Seminary, Cambridge, in Trinity Church, Sunday afternoon. The text was from St. John xvii. 19, "For their sakes I sanctify myself." Dr. Hodges said in part:—

I purpose to speak on the subject of influence, because you are all fitted to be influential, you are all resolved to be as influential as you can. I take for my particular theme the elements of influence. I mean the qualities which make men influential for good. It is my purpose to consider in several details that which we intend when we speak of sacrificing ourselves. For their sakes, in order that we may be useful citizens of the kingdom of God and effective contributors to the happiness and excellence of society, what sort of persons ought we to be?

There are two primary things that concern influence. First come the determining elements, whether it is for good or for evil; and, second, the effective elements, which make it either strong or weak. The force of influence necessarily depends on the person exerting it. The world is looking to the college man of to-day to exert a great influence for good, and it is depending on him to do the right thing.

Something more than righteousness and holiness are essential to good influence. The man who is devoutly religious and thinks of nothing else than his religion has almost no influence for good. Practicability in the form of sympathy and helpfulness are needed.

Members of the class of 1908, we want you to be influential persons.

We greet you in the hope that you are going to reinforce the powers which make for betterment. We expect you to be useful citizens. That is what you are educated for, and any usefulness which is of large account includes the service of society. For our sakes you are to sanctify yourselves. By the determining elements of righteousness and holiness you are to make your influence good. By the effective elements of ability, of sympathy, or both together, you are to make your influence strong. To this high mission we bid you welcome in the name of God.

CLASS DAY

To the accompaniment of fluttering fans on one of the hottest days Class Day has ever experienced, the Seniors celebrated Class Day, 1908, in Huntington Hall on Monday afternoon. The class president, Harry A. Rapelye, opened the exercises, and unveiled four new sections of the Huntington Hall frieze, executed this year by the fifth-year students in architecture under the direction of the life-class instructor, W. Felton Brown, and made possible by a decennial class gift from 1895. Herbert T. Gerrish, as first marshal, presided at the exercises. The historian and statistician, Kurt Vonnegut, compared the course at Tech to a game. He likened the Faculty to one team and the students to another. The object of the class was to score as much as possible by getting a large number across the goal line of graduation. With the class of 1908, 229 scored, and received the degree of Bachelor of Science. Twelve Master's degrees and three degrees of Doctor of Philosophy were also won.

The class started the course with 298 members, but only 36 per cent. of those who are graduated were from the original number. The others come from other colleges or from former classes at the Institute. The average age of the class is 22 years 10 months and 4 days. The oldest is 32, and the youngest 20. The tallest man measured 6 feet 4 inches, and the shortest man 5 feet 4 inches. The average is 5 feet 10 2–5 inches. The average weight is 149 pounds. Half the men admit they drink occasionally, and 53 per cent. smoke. The feminine members were not questioned. 42 per cent. of the

class wear glasses, which, said the statistician, testifies to their hard-working propensities.

At the request of the Institute authorities, information was gathered concerning the number of men who work during the summer. In the vacation following the first year, 24 per cent. worked for ten weeks; in the second, 50 per cent. worked; and, in the third year, 51 per cent. were industrious.

The class prophecy shared honors with the president's introduction as the best exercise of the day. Basil L. Gimson was the seer selected by the class. He started his talk in a most original way, being transported a decade hence by inhaling the fumes of a mystic substance in the chemical laboratory.

Francis H. McGuigan, as presentation orator, after relating the characteristics of various members of the class, presented them with appropriate gifts. The star of these was a black pickanniny carried on the stage in a large box. This lady was given to George Glover to make up for the trips to Revere Beach that he would lose upon his departure from Boston.

The class oration was delivered by Joseph G. Reid. He talked on the duty of the engineer in society and civic life. He called attention to the narrowness of student life at the Institute on account of the great pressure of work and the lack of a comprehensive social relationship. He pointed out the absolute need of versatility to a successful man. The recreation or avocation chosen, if it were politics or civic activity, would bring men into touch with other men, and would afford a means of meeting men in things they were interested in.

The class gift to the Institute was presented by George T. Glover. He said:—

The class of 1908 has always taken the greatest interest in Institute affairs, and, now that we are leaving the sphere in which we once had an active part, it is our desire to leave behind something which may prove of service to those who come after us and which may be a reminder of the life of our class at Technology.

A few months ago a movement was started to secure a new Union for the use of the students. The plan came from a growing appreciation of the

necessity for more social intercourse between the fellows here. Our class has desired to record its entire sympathy with this plan, and help it along in any way possible.

The privilege has fallen to our class of taking the first step toward the realization of this project. We are therefore leaving as our gift for the lounging-room of the new Union a large round table and chairs. We hope this will be in some slight way expressive of the interest in the welfare of Technology taken by the class of 1908.

After the exercises were over, the members of the class and their guests went down on the lawn between Rogers and Walker to partake of the class spread.

The class day committee, which occupied the stage and had charge of all the arrangements for the day, was made up as follows:

Horace Ethan Allen, Maurice Everett Allen, Henry Washington Blackburn, Clifford Hall Boylston, Langdon Coffin, Samuel Harries Daddow, Raymond Edward Drake, Leslie Burton Ellis, Winthrop Drew Ford, Herbert Thurston Gerrish, Charles Alphonsus Gibbons, Jr., George Thummel Glover, Lafayette Boyd Hedge, Bernard Shepard Leslie, Francis Harrington McGuigan, Jr., Thomas Whitley Orr, Harold Smith Osborne, William Joseph Pierce, Joseph Pope, Harry Andrew Rapelye, Joseph Gilman Reid, Leavitt Weare Thurlow, John Theodore Tobin, Kurt Vonnegut, Harry Webb, Edgar Irving Williams.

SENIOR DANCE

Nearly one hundred couples attended the Senior dance in Copley Hall on Monday evening, and in spite of the heat enjoyed a very pleasant evening. The cool promenade on Clarendon Street was much in use between dances.

GRADUATION EXERCISES

The programme at the graduation exercises was simple, as has been the custom, and consisted of the reading of abstracts of theses

in eleven courses, the president's address, and the awarding of degrees.

To three men was given the degree of Doctor of Philosophy, to twelve that of Master of Science, while two hundred and twenty-nine had conferred upon them the degree of Bachelor of Science.

The Seniors who read abstracts of their theses, together with the courses they represent, are: Civil Engineering, Howard B. Luther; Mechanical Engineering, Langdon Coffin; Mining Engineering, Bradford B. Holmes; Architecture, Edgar I. Williams; Chemistry, Rufus W. G. Wint; Electrical Engineering, Edmund L. Warren; Biology, Laurence T. Walker; Physics, John H. Locke; Chemical Engineering, Clarence W. Clark; Sanitary Engineering, Donald H. Maxwell; Naval Architecture, Maurice E. Denny.

President Noyes said in part to the graduates:—

The Institute, far more than the academic college, lays stress upon scientific studies as an essential part of a liberal training. It has no sympathy with the idea that a man can be considered broadly educated, whatever his knowledge of the classics or history or literature, who is entirely ignorant of the chemical composition and properties of the materials he daily deals with; who knows nothing of the elementary principles of mechanics, heat, light, and electricity which are constantly involved in the daily experiences of modern life and in almost all industrial operations; who looks nightly into the heavens, or observes the forms of land or water, sees the seasons come and go, watches the tides rise and fall, without knowing or caring to know the explanation of these phenomena. The Institute holds that a training in physical and natural science, though not the only essential part of education, is yet the chief factor in imparting a true culture and an adaptation to the affairs of life. . . .

Members of the Graduating Class,—I desire first of all to extend to you the hearty congratulations of the Corporation and Faculty on the accomplishment of the result for which you have successfully striven. You are to be congratulated not so much because the diploma which I shall soon have the pleasure of presenting to each of you certifies to the completion of a prescribed course of study and to the acquirement of much liberal and professional knowledge, as because it implies the possession and development of certain qualities of mind and character which are fundamentally essential to the highest success in life,—a willingness to subordinate the pursuit of

pleasure to the fulfilment of duties, a determination to accomplish in spite of difficulties whatever has been deliberately undertaken, an integrity of mind which will not contentedly accept as final imperfect or inexact results. The award to you of the degree implies, too, that you have formed sound habits of work that cannot fail to be of prime importance to you in your subsequent careers; for, while the Institute curriculum is not so exacting as to preclude a reasonable participation in the affairs of student life, yet it demands that time and effort be economically expended. There has been here no opportunity for that undue predominance of the physical and social activities over the intellectual which characterizes the student life of many colleges. As a former president said from this platform to a former graduating class, you are not now required to do what is implied in that ominous phrase, "turning over a new leaf." It is not now necessary for you to close a collegiate period of idleness or frivolity or dissipation with good resolutions of improvement for the future and with a determination now taken for the first time to pursue your work with seriousness of purpose and with the aim of high accomplishment. You have taken these resolutions long ago, and have already developed the qualities necessary for their fulfilment, else you would not be here to-day. It is only necessary for you to continue in the way that you have thus far pursued. . . .

With your graduation there comes upon you an entirely new obligation. Thus far you have been only developing your own powers. You are now called upon to use those powers for the service of your fellow-men. Your scientific training imposes on you a special obligation, because it opens to you special opportunities. You can render important kinds of service which other men cannot render. You are to play a part of peculiar responsibility in our great industrial and commercial system. You are not to deal directly with its financial and mercantile aspects, but you are charged with its improvement and further development through the introduction of scientific methods and principles. . . .

Your training thus opens to you an unusual opportunity for service to the community. And *service* is the keynote of the spirit of this twentieth century. . . .

The question for each of you is, therefore, How can you render the greatest service? If you follow this as your guiding principle, you need have no fear of failure in your life-work, even if it be judged from such other standpoints as the attainment of happiness, or of public recognition, or of personal influence.

He then, on behalf of the Corporation, presented the diplomas of graduation, as follows:—

DOCTORS OF PHILOSOPHY

George Alonzo Abbott, Charles Angus Kraus, Edward Wight Washburn.

MASTERS OF SCIENCE

Roland Barney Anthony, Frederic Gallup Coburn, Waldo Putnam Druley, Paul Henry Fretz, Edwin Graham Kintner, George Moir Johnstone MacKay, Edward Leyburn Moreland, Roy Warren Ryden, Armen Haigouni Tashjian, Alexander Hamilton Van Keuren, George Conrad Westervelt, Frank William Willey.

BACHELORS OF SCIENCE

Civil Engineering.—Robert Clifford Albro, Lawrence Howe Allen, Maurice Everett Allen, Monroe Ames, William Edward Barton, George Myron Belcher, Clifford Hall Boylston, Arthur Edmund Bremer, Claude Osgood Brown, Mortimer Perry Burroughs, Frederick Arthur Cole, Chester Simmons Colson, Hardy Cross, Henry Hyman Damon, Allston Dana, Stephen Lock Davidson, Arnold Truman Dean, Gregory Mumford Dexter, Gustavo Adolfo DuBois, Raymond West Ferris, Benjamin Greely Fogg, Herbert Thurston Gerrish, Gardner Sabin Gould, Wheaton Ira Griffin, Harold Wiley Griswold, Philip Jewett Hale, Julian Herbert Hunter Harwood, Robert David Hennen, Howard Bourne Luther, Stephen Chandler Lyon, Francis Harrington McGuigan, Jr., Rolando Arnoldo Martinez, William Durant Milne, Archer Corbin Nichols, Thomas Whitley Orr, Eugene Vorhees Potter, Charlton Dascom Putnam, Henry Jason Ruggles, Edward Michael Savage, George Schobinger, Charles Henry Shapleigh, Edward Richard Smith, Henry Vose Spurr, John Theodore Tobin, Freeman Eugene Towle, Ernest Joseph Hill Waters, Mason Tuxbury Whiting, George Dilley Whittle.

Mechanical Engineering.—Horace Ethan Allen, Robert Corson Angell, Robert Alexander Angus, Carl Henry Bangs, John Stetson Barnes, Frank Kennedy Belcher, Henry Washington Blackburn, Francis Marvin Bond, Kenneth Camm Boush, John Cummings Brooks, Philip Carter Brown, James Merrill Burch, Jr., Walter Evans Caldwell, Hendley Ross Callaway, Harold Leston Carter, Burton Wolcott Cary, Leslie Phelps Cassino, Dana Wright Clark, Lawrence Addison Clark, Clifford Nelson Cochrane, Langdon Coffin, Abraham Saul Cohen, Richard Carter Collins, Samuel Harries Daddow, James Howard Dennedy, Herbert Seton Eames, Charles Ashton Edmonds, Harold Cushing Faxon, Winthrop Drew Ford, Ferdinand Jacob Friedman, James Thomas Gallagher, Basil Lovibond Gimson, George Thummel Glover, Irving Morse Guilford, James Ellis Hale, Carl Albe Hall, Edward Rymes Hall, Carl Emil Hanson, Samuel Frink Hatch, William Roy Heilman, Clarence Loring Hussey, Stiles Fraser Kedy, Karl Raymond Kennison, George Cooper Lees, Bernard Shepard Leslie, Leo Loeb, Arthur Ashleigh Longley, Harry Chester Lord, William Joseph Pierce, Paul Rulison Powell, Harry Andrew Rapelye, John Randolph Reyburn, Miles Sampson, Joseph Blair Sando, Albert Terence Scannell, Clarence Herbert Spiehler, Charles Mullen Steese, James Martin Talbot, Joseph Warren Wattles, 3d, Rudolph Boynton Weiler, Masanao Yendo.

Mining Engineering.—Walter James Emmons Barcus, Ygnacio Safford Bonillas, Alexander Henry Bradford, Kenneth Gordon Chipman, Arthur Olaf Christensen, Leon Arthur Dickinson, Paul Revere Fanning, Victor Max Frey, Charles Alphonsus Gibbons, Jr., Nelson Simpson Hammond, Paul Harold Heimer, Bradford Buttrick Holmes, Clarence Ronald Lamont, Jesse Worth Maxwell, Desaix Brown Myers, Alec Newton Penny, Harry Patterson Sweeny, Tsok Kai Tse, Ching Yu Wen.

Architecture.—Mabel Keyes Babcock, Ralph Johnson Batchelder, Harry Howe Bentley, Chalmers Stevens Clapp, Russell Gilbert Crane, William Frederic Dolke, Jr., Howard Spencer Hazen, Jr., James Allen Kane, Rinker Kibbey, Hugo Franz Kuehne, Paul Willard Norton, Clifford Hamilton Preston, Frank John Robinson,

Frederic Becker Schmidt, John Rodney Tabor, Aram Torossian, Kurt Vonnegut, Edgar Irving Williams, Conrad Youngerman.

Chemistry.—John Starr Coye, Raymond Edward Drake, Clifton Nathan Draper, Paul Albert Esten, Ernest George Genoud, Arthur Thacher Hinckley, Warren Winchester Karnan, John Angus Kydd, Charles Lewis Lufkin, Emerson Fletcher Lyford, James McGowan, Jr., Frank Earl Mott, Everett Hiltz Newhall, William Chittenden Taylor, Leland Edward Wemple, Rufus William George Wint.

Electrical Engineering.—Viggo Edward Bird, William Peet Bixby, Wilfred Edwin Booth, Donald Bowman, Harry Wheeler Brown, Benjamin Bullard, Harry Lancaster Burgess, Rae Willard Davis, Herbert Lawrence Fletcher, Jacob Alger Fottler, Floid Merrill Fuller, John Clarence Gaylord, Lynn Sumner Goodman, Lee Hagood, Joseph Woodwell Ledwidge Hale, Lucius Felt Hallett, Matthew Cowden Hayes, Lafayette Boyd Hedge, Oliver Saunders Jennings, Ernest Edwin Kilburn, Charles Collins Kinsman, André Theodorovitch Kolatshevsky, Frederick William Lyle, Ralph Eric Manning, Gardner Armstrong Murfey, Utar James Nicholas, Harold Smith Osborne, Harry Chapman Patten, Alfred Griffin Place, Edward Ashby Plumer, Walter Everett Poor, Joseph Gilman Reid, Harry Frederic Richardson, Edgar Percival Slack, Alexander Caffee Sloss, Jr., Warren Daniel Spengler, George Edward Tolman, Edmund Leon Warren.

Biology.—Eugene Clarence Howe, Scott MacNutt, Edward Joseph Tully, Laurence Tidd Walker.

Physics.—John Harold Locke, Rens Edward Schirmer.

Chemical Engineering.—Alfred Bennett Babcock, Howard Edwin Batsford, Harry Stuart Chandler, Clarence Warner Clark, Chesney Harrison Criswell, Rufus Coffin Folsom, Arthur Livermore Gardner, John Gianella, Jr., Harold Peaslee Gurney, Maurice Trimble Jones, Jr., Eleazar Myers, Henry George Nicholas, Francisco Damaso Reyes, Leavitt Weare Thurlow, William Hervey Toppan.

Sanitary Engineering.—William Cumner Folsom, Donald Hebard Maxwell.

Naval Architecture.—Maurice Edward Denny, Edmund Francis Heard, Joseph Pope, Carroll Dame Steele, Loyd Hall Sutton.

After the exercises the audience had the pleasure of attending a reception by the Acting President in the Library of the Rogers Building, and of inspecting the various laboratories where interesting machinery and processes were on exhibition.

ALUMNI SPREAD

The entire east wing of the Brunswick was given up, from five-thirty to seven-thirty, on Commencement Day, to the alumni, a general spread being served in the largest room, and the separate classes having headquarters, with punches, in the various smaller rooms. About 450 were in attendance, and the exchanging of courtesies and the visiting of class to class made this new plan of celebration a pronounced success.

TECH NIGHT AT THE "POPS"

After the spread at the Brunswick the classes marched in more or less regular formation to Symphony Hall, where each class as it arrived was escorted to the tables assigned to it. The balconies were crowded with ladies, and when '86 came in, escorting the Acting President, and when, last of all, '08 marched in through the centre of the hall, they were showered with confetti and paper ribbons thrown from the balconies.

Owing to careful preparation in advance and discreet management during the evening, the noise was kept within bounds, cheering was confined almost wholly to the periods between the musical selections, and the Tech songs were sung with a harmony and volume quite unusual. This diminution in the uproar permitted a general exchange of greetings and conversation that made the evening thoroughly enjoyable.

GENERAL INSTITUTE NEWS

THE CORPORATION

The three hundred and twenty-second stated meeting of the Corporation was held on the afternoon of June 5. Appointments and promotions made by the Executive Committee were confirmed, as follows: Arthur A. Blanchard, Assistant Professor of Inorganic Chemistry; Alpheus G. Woodman, Assistant Professor of Food Analysis; Ervin Kenison and Harry C. Bradley, Assistant Professors of Drawing and Descriptive Geometry; Hervey W. Shimer, Assistant Professor of Palæontology; Joseph C. Riley and Charles W. Berry, Assistant Professors of Mechanical Engineering; Harrison W. Hayward, Assistant Professor of Applied Mechanics.

Reports were presented from several of the Visiting Committees. Degrees were then conferred upon 244 candidates, as follows: three for Doctor of Philosophy, twelve for Master of Science, and 229 for Bachelor of Science.

The Master's degrees were distributed among the courses as follows: Architecture, 1; Chemistry, 1; Electrical Engineering, 3; Naval Architecture, 7.

Bachelor's degrees were distributed among the courses, as follows: Civil Engineering, 48; Mechanical Engineering, 61; Mining Engineering, 19; Architecture, 19; Chemistry, 16; Electrical Engineering, 38; Biology, 4; Physics, 2; Chemical Engineering, 15; Sanitary Engineering, 2; Naval Architecture, 5.

The names are printed elsewhere in the REVIEW.

The Acting President announced the following gifts: $5,000 from the John C. Haynes estate; $1,000 per year for three years from Mr. Charles W. Hubbard for assistance in establishing a Research Laboratory of Applied Chemistry; $500 from Mr. Guy Lowell towards a travelling scholarship in the Department of Architecture; $200 from the Caroline A. R. Whitney estate for the benefit of

women students of the Institute. He also announced the discontinuance of the office of Secretary of the Institute, and the creation of a new official to be known as President's Assistant. He stated, moreover, that the following gentlemen of the Corporation had been appointed a committee on the social and physical welfare of students: Messrs. Wigglesworth, Stevens, Locke, Copeland, du Pont, Morss, and Bradlee.

On the evening preceding the formal meeting of the Corporation a dinner was held at the Hotel Brunswick for an informal consideration of various questions prominently before the Institute. Invitations had been sent to all members of the Corporation and to the members of the Faculty in charge of the several departments. About forty were in attendance, and the entire evening was spent in a general and interesting discussion, mainly upon questions concerning the welfare of the undergraduates and the possibility of closer relations between the Institute and the general public.

CHARLES L. LOVERING

On May 1 Mr. Charles L. Lovering died at his home at Taunton in his seventy-sixth year. He had been a member of the Corporation since March 11, 1896, and had served upon the following committees: Mining and Geology; Literature, History, and Political Economy; Chemistry and Chemical Engineering. Mr. Lovering was a descendant of Colonel Joseph L. Lovering, an English officer who landed at Quebec with General Wolfe. His father, in the early part of the nineteenth century, established in Taunton the cotton mills now known as the Whittenton Manufacturing Company, and upon his retirement these mills and other large enterprises were carried on by Mr. Lovering and his two brothers, the Hon. William C. Lovering and Mr. Henry M. Lovering. The deceased was treasurer of the Merrimac Manufacturing Company, president and director of the American Felt Company, a trustee of the Boston Terminal Company, a director of the Elizabeth Pool Manufacturing Company, a director of the Gosnold Mills Company of New Bedford, treasurer and director of the Massachusetts Cotton Mills, vice-

President of the Massachusetts Hospital Life Insurance Company, treasurer and a director of the Whittenton Manufacturing Company.

THE FACULTY

On recommendation of the Department of Architecture and with the approval of the Departments of Drawing and Mathematics it has been voted "that persons applying for admission as special students in architecture be permitted to substitute for the regular examinations in plane and solid geometry a special examination in geometry which shall be of a somewhat practical character, emphasizing geometrical construction, and, as far as possible, to be a test of fitness for the courses in mechanical drawing and descriptive geometry."

The Committee on Courses of Instruction and on Five-year Courses have been considering the laying out and announcing of definite five-year courses of study leading to the Bachelor's degree. The plan proposed by them, and approved by the Faculty, is as follows:—

"There shall be no deviation from the four-year course during the first year. The remaining three-quarters of the regular course shall be approximately equally distributed over four years, giving an average time allotment of 540 hours in each of the eight terms.

"Definite provision shall be made for the addition of particular elective subjects, and encouragement shall be given to students to take additional work of their own choosing in the time gained by the proposed distribution.

"There shall be definite published schedules, attendance cards, and tabular views.

"A definite programme shall be offered only in those larger departments where a feasible tabular view can be safely guaranteed, and in any publication of the plan a statement shall be made that the Faculty will make every reasonable effort to provide for students in other departments, but that a working tabular view cannot be guaranteed in advance.

"It was voted that the five-year schedule of study shall be pub-

lished in a special circular (not in the programme or catalogue), and that the circular be sent each year to the students in the first-year class and to their parents."

Definite schedules have been approved for Courses I., II., and VI.

Exercises are to be suspended on Friday, November 6, after twelve o'clock noon, for Fall Field Day.

At the annual meeting the following officers were chosen for the ensuing year: A. A. Noyes, Chairman; A. L. Merrill, Secretary; A. E. Burton, Dean. The plan for requiring physical training in the first-year class was unanimously approved by the Faculty.

NOTES

The officers of the Institute and of its alumni will be kept busy during the next few years in planning and carrying out anniversary celebrations. In June, 1909, will be held the Second Tech Reunion, which it is proposed to carry out on even more enthusiastic lines than those of the reunion of 1904; and on April 10, 1911, comes the fiftieth anniversary of the granting, by the legislature of Massachusetts, of its charter to the Institute. While no plans as yet have been made for the latter anniversary, so significant an occasion will undoubtedly be marked by important exercises.

Professor Sedgwick has been appointed one of a commission of four to investigate the causes of typhoid fever in Pittsburg, by Mayor Guthrie, of that city. The expenses of the investigation will be paid out of $10,000 appropriated by the Russell Sage Foundation.

He was also offered by Mayor Hibbard, but felt obliged to decline, one of the vacancies in the Board of Health.

Professor George F. Swain, head of the Civil Engineering Course, has been appointed by President Roosevelt one of the eleven members of the Inland Waterways Commission.

Frederick H. Newell is also a member of the commission. He holds the position of chief engineer in the United States Reclamation Service.

Dr. William H. Walker, Professor of Industrial Chemistry, was

presented with the Nichols medal by the New York section of the American Chemical Society at their dinner of April 10.

In the new tower that is being built in place of the old stone tower at Blue Hill Observatory, the Institute will install its new seismograph. The tower is being made moisture-proof as far as is possible. When the seismograph is installed, it will be under the charge of the observatory force.

DEPARTMENT NOTES

CIVIL ENGINEERING

Mr. Allston Dana, of the class of '08, has been appointed Instructor of Civil Engineering at the University of Montana. The Professor of Engineering in that university is N. R. Craighill (Course VI., 1894), son of General William P. Craighill, U.S.A., formerly Chief of Engineers, now retired. Mr. Hardy Cross ('08) has secured a position on the Missouri-Pacific Railroad under Mr. Charles E. Smith (Course I., 1905). Mr. Smith now has charge of the bridge work on this system. Mr. H. D. Luther ('08) returns to the Institute as an Assistant in the Civil Engineering Department. Mr. H. T. Gerrish ('08) will join his father in the dredging business. Mr. W. D. Milne ('08) has secured a position with a contractor in Columbus, Ga. Mr. C. H. Shapleigh ('08) has secured a position on the Alabama & Vicksburg Railway. Mr. G. Schobinger has a position in Chicago.

There are some encouraging signs of improvement in the business situation, such as an increasing demand for men and the tone of letters from former graduates. In the case of one of the principal railroads of the country, where salaries were reduced in the engineering department last year, word comes that the old salary list has been restored. In the case of another railroad, upon which all work was stopped last year, work has now been resumed and men are being sought.

ARCHITECTURE

Because of the gift of Mr. Lowell the Department of Architecture is able to announce for the ensuing year a Traveling Fellowship of $1,000, to be awarded upon the basis of distinguished merit as shown by the results of a competitive design.

CHEMISTRY AND CHEMICAL ENGINEERING

At a recent meeting of the Executive Committee of the Institute it was voted to establish, as a branch of the department, the Research Laboratory of Applied Chemistry. This laboratory is the outgrowth of work, already mentioned in the REVIEW, which has been carried on during the past two years by research assistants under the direction of Professor Walker. The formal organization of the laboratory at this time is directly due to the generosity of Mr. Charles W. Hubbard of the Corporation who has contributed funds for its support, which, together with a part of the income of the Charlotte B. Richardson Fund appropriated for the purpose, will make it possible to continue work on a modest scale for at least three years. The work and courses of instruction which may be given in the laboratory are under the charge of Dr. Walker, who is designated as director of the laboratory; and for the present the researches will be carried on in the room formerly known as the Textile Coloring Laboratory. Mr. W. K. Lewis, a graduate in Chemical Engineering, now studying at Breslau, Germany, will be Research Associate in Applied Chemistry next year, and a second associate will be elected later. Both will probably begin work in September.

It is expected that two classes of problems will be dealt with by this Research Laboratory. The first of these is represented by the work already accomplished and in progress on the causes of corrosion of iron or steel; that is, problems of importance to all engineering industries. The second class of problems which it is hoped to undertake includes special work for individual concerns which they have not the facilities to handle in their own laboratories. There are already indications that this phase of the work will meet a real need on the part of manufacturers, which will serve to bring the

Institute more closely in touch with them, and will also afford an attractive field for advanced work on the part of graduate students and the members of the instructing staff of the Institute in their spare hours.

The laboratory of the Institute and the number of men on the instructing staff of the department who are specialists in various lines and available for consultation make the conditions unusually favorable for such an undertaking; and it is hoped that this may develop into a most important branch of the work of the Institute. The advanced courses of instruction and seminars which it is proposed to inaugurate will also benefit both students and instructors, as has been the case with similar courses in the Research Laboratory of Physical Chemistry.

The following changes will be made in the instructing staff for next year: Messrs. W. W. Kennedy, F. B. Shields, H. W. Mahr, and C. R. Bragdon leave the Institute to enter technical positions. Mr. R. D. Gale and Mr. G. F. White will devote their full time to advanced work for a higher degree, the latter at Johns Hopkins University. Mr. O. L. Peabody will be transferred from the Analytical Laboratory to that of Technical Analysis, Mr. C. L. Nickerson from Inorganic to Analytical Chemistry, Dr. E. B. Spear from Analytical to Inorganic, Mr. R. G. Woodbridge, Jr., from Organic to Analytical. The new assistants are Mr. C. W. Clark, Industrial Chemistry; Mr. H. S. Chandler, Organic Chemistry; Mr. W. H. Toppan and Mr. A. B. Babcock, Theoretical Chemistry.

Dr. Miles S. Sherrill has been obliged to put down active work for a time on account of ill-health, but it is anticipated that he will resume instruction in the fall.

Dr. A. A. Blanchard and Mr. A. G. Woodman have received deserved promotion to Faculty membership, the former as Assistant Professor of Inorganic Chemistry, and the latter of Food Analysis. Dr. W. R. Whitney has been appointed Non-resident Professor of Chemical Research.

Mr. G. W. Rolfe has returned from Porto Rico, and reports a successful season, although weather conditions have been adverse.

Drs. Walker, Fay, and Talbot have each recently visited Sche-

nectady and spoken at a colloquium held at the research laboratory of the General Electric Company under the direction of Dr. Whitney. Dr. Walker has also addressed the New England Street Railway Club on "Chemistry and its Relations to Street Railway Work."

Mr. J. W. Phelan has been made chairman of a committee appointed from the American Leather Chemists' Association for the purpose of systematizing the analytical methods of leather chemists and for introducing uniform standard methods. In conjunction with Mr. P. S. Fiske he has recently published in the journal of the association a paper on "The Acidity of Tan Liquors."

Professor Talbot has been made chairman of a committee of the American Chemical Society appointed to consider ways by which the society can improve its relations to educational work of all grades which has to do with the training of chemists. He is also a member of a joint committee comprising prominent representatives of the various engineering societies to consider and report upon the training of engineers. This committee was appointed at the request of the Society for the Promotion of Engineering Education.

Professor Talbot gave a dinner at the Tech Union on May 10 to the Seniors in Chemistry and Chemical Engineering, which was attended by members of the Faculty of the Chemical Department. The other guests, who were the speakers of the evening, were Dr. William McMurtrie, of New York; Mr. S. W. Wilder, of the Merrimac Chemical Company; Mr. A. D. Little; and Mr. Isaac W. Litchfield. Dr. Walker also spoke of the new research laboratory.

The small number of graduates in chemistry and chemical engineering who have reported themselves as idle on account of business depression is gratifying. The calls for men are fewer than usual, but a considerable portion of the graduates in chemical engineering of the present year are already assured of positions, and some of the chemists are also placed.

The biennial summer course in Industrial Chemistry began June 10. The party numbered twenty-one. An account of this trip will appear in a later number of the REVIEW.

ELECTRICAL ENGINEERING

The dinners of the Electrical Engineering Society, which were referred to in the January number, have been extended during the year to the number of three. The expenses of the first two were paid by gentlemen interested in the progress of the department, and at the third dinner Professor Jackson was the host of the Society.

The first dinner was held on December 5, and Mr. H. G. Stott, of New York, president of the American Institute of Electrical Engineers, was the guest of honor, and spoke interestingly. The second dinner was held on March 5, and Professor Charles P. Steinmetz, of the General Electric Company, was the guest of honor, and spoke. The third dinner was held on May 22, and Professor Elihu Thomson was the guest of honor, and spoke in his very delightful manner. Mr. Stott chose for his subject some of the experiences that arise in the life of a young engineer. Professor Steinmetz chose to talk upon the extent of the field within which electrical engineers may elect their vocations and the influence of electrical engineers on the national life. Following some inquiries, he also spoke briefly about some recent extensions which he has made in the mathematical treatment of the flow of alternating currents in electrical circuits. Professor Thomson took for his subject the early days of electric lighting, beginning with his experiences about the middle of the seventies, when a large dynamo was of a capacity of about five horse-power, and he traced the development for twelve or fifteen years for the purpose of showing the manner of the development of the electrical arts. Each of the talks was of more or less historical and reminiscent character. If it is necessary to know the past to understand the present and to forecast the future, as has been asserted, these talks should do much for the students who are likely to go into the work of developing or managing electrical engineering enterprises. The students found a great deal of inspiration in the talks.

The Faculty has recently been considering a more formal arrangement of the five-year engineering courses. An adopted five-year arrangement which may be followed by Course VI. students will

afford an opportunity for them to extend their study over a greater proportion of the engineering field than is possible in the regular four-year course, or to otherwise bring more collateral study into relation with the electrical subjects. The last three years of this five-year course also make a particularly desirable electrical engineering course for graduates of colleges of liberal arts. At the present time college graduates coming to the Institute to enter Course VI. are ordinarily ahead of the second-year class, but considerably behind the Junior class unless they have used particular judgment in making elections in their college careers. The new five-year course affords these college graduates an opportunity to enter its third year on even terms, and during the following three years at the Institute they will get all the professional work of Course VI., beginning with the subject of applied mechanics, and have the additional possibility of further strengthening themselves by pursuing a portion of the advanced electrical studies which are provided for candidates for the Master's degree.

A particularly fine portrait photograph of the inventor Edison, showing him in bust length and nearly one-half size, has been hung in the electrical engineering reading-room. It was presented for the purpose by Mr. Charles L. Edgar, president of the Edison Electric Illuminating Company of Boston.

A number of the theses of Course VI. students are of particular interest. One of them, carried out by M. C. Hayes, a graduate of Princeton, and E. L. Warren, a graduate of Yale, presents a study of the traffic conditions in the Hoosac tunnel, and shows that that important bore for freight carried between the East and the West puts an absolute limit on the traffic capacity of the railroad passing through it, but suitably replacing the steam locomotives used in the tunnel by electric locomotives would double the capacity of the tunnel. Another one, by W. D. Spengler, a graduate of Adelbert College, and L. F. Hallett, presents a study of the probable increase of suburban traffic on the Boston & Albany Railroad which would result from electrification of the "circuit." Experimental data for a thesis gathered by F. W. Willey, a graduate of Purdue University, and O. S. Jennings, a graduate of Brown University, show the effect

impressed by the earnestness with which the students there enter their work, but each felt that the scientific training given to the students at the Institute is unrivalled.

Mr. W. V. Lyon, Instructor in Electrical Engineering, is completing the manuscript of a book on Electrical Engineering Problems which will be published by the McGraw Publishing Company during the summer.

In connection with the lectures on Electric Light and Transmission of Power this term, Mr. A. S. Michener, comptroller of the Stone & Webster organizations, presented an admirable lecture to fourth-year students of Course VI. on the Theory of Accounting and the Relations of the Engineering, Operating, and Executive Departments to the Accounting Department, and Mr. R. A. Phillip, of the Stone & Webster Engineering Corporation, presented a finely conducted lecture on Modern Switching Practice with High-tension Circuits.

RESEARCH LABORATORY OF PHYSICAL CHEMISTRY

Three members of the Research Laboratory staff have received this year the degree of Doctor of Philosophy,—Mr. C. A. Kraus and Mr. E. W. Washburn in physical chemistry and Mr. G. A. Abbott in inorganic chemistry.

Mr. Abbott is a graduate of De Pauw University, and is a teacher in the Mechanic Arts High School of Indianapolis. His thesis represents the results of an investigation carried on in this laboratory in the years 1905–07. Its title is "A Physico-chemical Study of Ortho and Pyro Phosphoric Acids and of their Sodium and Ammonium Salts." Mr. Abbott's work is an important contribution to our knowledge of the processes occurring in the mutual transformation of the acids of phosphorus.

Mr. Washburn took his Bachelor's degree at the Institute in 1905, and has devoted three years to the study of "Ionic Hydration and True Transference Numbers," which is the title of his thesis. The problems studied by Mr. Washburn had been undertaken by several scientists before he began his research, but no results of importance

had been obtained on account of the extreme difficulty of the experimental methods. It was necessary in this work to devise analytical methods which rival in accuracy those employed in the most accurate atomic weight determinations. Mr. Washburn has revised the quantitative method of determining arsenic, and has published the results of this research in a separate paper, entitled "The Theory and Practice of the Iodometric Determination of Arsenious Acid." Although this method proved unavailable for the work in hand, others were devised which have permitted, for the first time, the calculation of the relative hydration of several important ions. Mr. Washburn has, furthermore, made a complete study of the subject of hydration in solution, and is preparing a comprehensive review on this subject.

Mr. Kraus received his Bachelor's degree from the University of Kansas in 1898. He then spent one year in graduate work at the Johns Hopkins University, and returned to Kansas to teach for one year, and also taught physics for three years in the University of California. Before coming to the Institute, Mr. Kraus had published a considerable number of important scientific papers. The last four years he has spent in the Research Laboratory of Physical Chemistry, where he has investigated "Properties of Metals dissolved in Non-metallic Solvents," and more particularly "Properties of Solutions of Metals in Liquid Ammonia." Mr. Kraus has accumulated a very large amount of information concerning the nature of these very interesting solutions, and his paper is a valuable contribution to our knowledge of metals and of substances which possess semi-metallic character.

GEOLOGY

The following changes in the instructing staff have been made for the year 1908–09:—

Mr. Waldemar Lindgren, of the United States Geological Survey, has been appointed Lecturer in Economic Geology, to succeed Professor Kemp. Dr. H. W. Shimer has been appointed Assistant Professor of Palæontology, and Mr. C. H. Clapp Instructor in Geology.

The majority of the members of the departments are to spend the coming summer in the vicinity of Boston, engaged in office and laboratory work.

Professor C. H. Warren intends to do field work in Ontario and other parts of Northern Canada, and in Western Massachusetts.

Mr. C. H. Clapp has been assigned work by the Canadian Geological Survey in the southern part of Vancouver Island.

MODERN LANGUAGES

Owing to the reduction of the modern language requirements, the instructing staff has been reduced from eight to seven members. Apart from this change, the first term of next year will be marked by three innovations, the introduction of Esperanto and of a special course in German III. for students of Course VI., and by the presence of a Prussian teacher furnished under the plan suggested by the Prussian Minister of Education to the Carnegie foundation. This plan has been in effect for some time between Prussia, on one side, and France and Germany, on the other. It does not contemplate that teachers take any part in the formal instruction of the institution which they visit. "They do not do the work, or even part of the work, of a regular teacher. This would impose too heavy a burden upon the visitors and would render their relationship with the students too didactic. The plan is for the visiting teacher to teach conversation in his own language in an informal manner for not more than two hours each day, his classes being small groups of upper classmen who wish to perfect themselves in the language of the teacher." (Circular of Carnegie Foundation.)

At the Institute this instruction will be given for the greater part to students of third-year options. The department will have practically a French exchange teacher in Mr. Dike, fresh from his year's sojourn and study in France.

MATHEMATICS

Professors Woods and Bailey have been actively engaged in the preparation of Volume II. of the New Course in Mathematics,

which is expected to be ready in provisional form for use at the beginning of the coming year.

Professor Bartlett will resume teaching in October, and Dr. Moore will return from Italy, where he has recently had the interesting opportunity of attending the International Congress of Mathematicians at Rome.

Mr. Ernest A. Miller, who has been Instructor in the department since 1902, has resigned in order to engage in business at Ithaca, N.Y.

Dr. W. H. Rover, who was appointed Instructor in 1905, has accepted an Assistant Professorship at Washington University, St. Louis, of which he is a graduate.

Dr. N. J. Lennes, who was appointed Instructor for the year of Dr. Moore's absence, has received an appointment at Brown University.

ENGLISH

Mr. Allen French (M. I. T. 1892), after a year of very satisfactory service, has resigned to accept a place in the English Department at Harvard. He will be succeeded by Mr. Sidney Gunn, A.B. of Dalhousie and A.B. and A.M. of Harvard.

ECONOMICS

Professor C. W. Doten attended a quarterly meeting and dinner of the American Statistical Association, of which he is the secretary, held at the Yale Club in New York, April 24.

Professor Doten also attended the National Conference of Charities and Correction at Richmond, Va., May 7–10, as a delegate from the School for Social Workers.

THE UNDERGRADUATES

CONVOCATIONS

On April 28 Mr. Charles M. Jesup gave a talk on the "Responsibilities of American Citizenship" before an enthusiastic convocation. He said that his subject was the result of practical ideas gained through experience.

May 22 Professor George F. Swain addressed a convocation in Huntington Hall on the Congress of Governors called by President Roosevelt to consider the best means of preserving the natural resources of the country. Professor Swain was appointed by the Acting-governor to represent Massachusetts in this Congress.

INSTITUTE COMMITTEE

At its last meeting of the year the committee made an important and far-reaching change in its membership by passing the following amendment to the constitution: "The committee shall consist of the class presidents and two members to be elected from each class, together with the presidents of the professional societies, the editor-in-chief of *The Tech* and *Technique*, the general managers of the musical clubs and the Show, and the presidents of the M. I. T. A. A. and the Y. M. C. A."

The committee, as representative of the whole Institute undergraduate body, should be able to exert a strong influence upon student affairs.

THE TECH SHOW

Garnett Alfred Joslin, '09, has been appointed general manager of the '09 Tech Show. The other leading officers are: Richard F. Goodwin, Jr., '10, stage manager; Carl J. Sittinger, '10, business manager; and Dudley Clapp, '10, advertising manager.

"THE TECH"

Channing Turner, '08, will be editor-in-chief of Volume XXVIII. of *The Tech*. Douglas C. McMurtrie, '10, will be managing editor, and Richard S. Bicknell, '10, business manager. Holman I. Pearl is secretary of the board.

Thirteen members of previous boards of *The Tech* attended the annual Tech dinner at the Hotel Westminster, June 5. Channing Turner acted as toastmaster.

An important outcome of the dinner was the formation of an association of *Tech* editors. The following organization committee was appointed: A. D. Little, '85; Professor C.-E. A. Winslow, '98; Isaac W. Litchfield, '85; and Channing Turner, '08. The association will act as an advisory board to the current editors.

The principal speakers at the dinner were Mr. Litchfield and Professor Winslow.

"TECHNIQUE, 1910"

At a meeting of the 1910 *Technique* Electoral Committee April 28, Forrester B. Avery, Clifford C. Hield, Douglas C. McMurtrie, and Philip D. Terry were elected editors.

Editor-in-chief, associate editor, grind editor, and history editor will be elected from these four.

CABOT MEDALS FOR IMPROVEMENT IN PHYSICAL DEVELOPMENT

"It has been recommended that the Cabot Medals for the year 1907–08 be awarded to the following students: Burgess Darrow, '10; Edward Kloberg, '08; Harry Eleazer Lake, '11; Philip Gustave Laurson, '10; William Orr Whitney, '11.

"The following students are regarded as worthy of honorable mention: Suren Bogdasarian, '11; Sidney Logan Day, '11; Marcus Aurelius Grossman, '11; Delos Garriott Haynes, '09; Arthur Bancroft Richardson, '11.

"ALFRED E. BURTON,
"ALLYNE L. MERRILL,
"HENRY G. PEARSON,
"WINFIELD C. TOWNE,
"Committee on the Award of the Cabot Medals."

PROFESSIONAL SOCIETIES

Civil Engineering Society.—John F. Stevens, former chief engineer of the Panama Canal, was the chief speaker before the annual dinner of the society, May 4, at the American House. In regard to labor Mr. Stevens said: "Our scientific schools are doing a great work, teaching essentials, training brains, in fact everything is taught except man. Graduates are as innocent as babes when it comes to handling men." Frank B. Gilbreth, a noted contractor, gave an account of the endeavors of Fred Taylor, an expert on the subject, in the settlement of the labor problem. He advised the establishing of a course in the Institute on the laws of management. Desmond FitzGerald, a member of the Corporation, started out by refuting the statement that Tech men are big-headed. Professor Swain urged the importance of continual contact with the members of the profession, particularly by joining the American Society of Civil Engineers. At the present time the Institute is far ahead of the other colleges in regard to the number of members. John T. Tobin acted as toastmaster.

L. D. Nisbet, '09, was elected president of the society at its meeting of May 12. S. N. McCain, '09, was elected vice-president; J. M. Fitzwater, '10, secretary; R. P. Waller, '09, treasurer; and F. R. Faulkner, '09, A. B. Henderson, '09, and L. J. Towne, '09, members of the executive committee.

Mechanical Engineering Society.—At the annual dinner of the society at the Copley Square Hotel, April 3, Mr. J. P. Tolman, '68, gave a talk on "Insurance." The other speakers were Professors Lanza, Schwamb, Haven, and Peabody.

At a meeting of the society at the Union, May 4, officers were elected for the next year, and talks were given by E. R. Hall, '08, and J. M. Talbot, '08. The following were elected officers: president, C. W. Hubbard, '09; vice-president, J. W. Nickerson, '09; secretary, F. A. Dewey, '09; treasurer, B. W. Dow, '09; executive committee, R. W. Millard, '09, A. T. Weeks, '09, and H. A. Hale, Jr., '10.

Mining Engineering Society.—The officers for the ensuing year are as follows: president, L. A. Loomis, '09; vice-president and

treasurer, A. L. Dickerman, '09; secretary, R. S. Breyer, '10; George Miller, '08, and V. C. Warren, '10, were elected to serve with the other officers on the executive committee.

Architectural Society.—Clarence Jay Brown, '09, was elected president of the society for the year 1908–09, at the meeting of May 14.

Other officers are as follows: Montague Flagg, '09, vice-president; Thomas Henry Atherton, Jr., A.B., '09, secretary; Felix Arnold Burton, A.B., '10, treasurer. The executive committee will be made up of Alfred Galpin Kellogg, '09; John Carlisle Bollenbacher, A.B., '09; and Daniel Wilson Gibbs, '09.

A large number of the architects attended the annual dinner of the Boston Architectural Club at the Hotel Somerset on May 15, the affair being a sort of reception to the winner of the Rotch Travelling Fellowship, Israel P. Lord, a graduate of the Architectural Department. The Harvard architectural students gave their theatrical production, "The Mummy and the Lulu Bird," following the regular speakers, of whom Professor Despradelle was one.

With Mr. Ralph A. Cram as the principal speaker of the evening, and with the majority of their instructors present, the society ended one of its most successful years at the annual dinner at the Copley Square Hotel May 16.

Chemical Society.—With J. F. Norton, '06, as toastmaster, the society held a dinner at the Union, April 28. The annual elections were announced as follows: president, C. H. Pope, '09; vice-president, W. J. Kelley, '09; treasurer, C. W. Gram, '09; secretary, C. S. Robinson, '09; and L. J. D. Healy, '09, member of the executive committee. Dr. Talbot advised the upholding of the dignity of the chemical engineer. Dr. Gill spoke of the value of a thorough familiarity with the tools and instruments of a laboratory, while Dr. Walker talked on the American Chemical Society, advising all graduates of Courses V. and X. to become members. Mr. Charles Field gave an interesting account of some of his Western experiences. Dr. F. H. Thorpe gave a talk upon "The Self-made Man."

Biological Society.—Organized on a permanent basis Jan. 7, 1908, the Biological Society has enjoyed a rapid and successful growth, and now stands as the representative professional society of Course

VII. and to some extent of Course XI., on a level with the other course societies of the Institute.

At the last dinner of the society for the year, April 30, Mr. George C. Whipple, the prominent sanitary engineer, of the firm of Hazen & Whipple, New York, gave an interesting illustrated talk on "Typhoid Fever."

CLUBS AND ASSOCIATIONS

Y. M. C. A.—Officers for the coming year have been elected as follows: president, T. Henry Atherton; vice-president, Myron M. Davis; recording secretary, Robert E. Doane; treasurer, John N. Brooks.

Brotherhood of St. Andrew.—Mr. Fred R. Kneeland, instructor in the Chemical Department, has been chosen director of the Technology Chapter for the coming year. Richard H. Ranger, '11, was re-elected secretary-treasurer.

Walker Club.—Professor J. O. Sumner, of the History Department, talked before the club April 28, the speaker giving some deeply interesting anecdotes from his travels in Europe and South America.

Civic Club.—The club had a House of Representatives meeting at the Union, April 7. Hon. Grafton D. Cushing, of Boston, a member of the State legislature, in his introduction pointed out how this State's legislation accomplishes results.

Many vital and interesting talks on the relation of engineering to society in general were given at the club dinner, the last event of the year, at the Union, May 9. In a well-worded speech, J. G. Reid, '08, turned over the presidency to Ridsdale Ellis, '09, who was recently elected for next year. Thirty-five men, including Dean Burton, Professors Sedgwick, Bates, and Seaver, were present.

Musical Clubs.—The annual dinner and meeting of the Glee, Banjo, and Mandolin Clubs was held May 9 at the Copley Square Hotel. In the combined clubs Clifford C. Hield, '10, was elected president; N. Coleman, '09, vice-president; F. W. Sharman, '08, secretary; Wallace D. Richardson, '10, general manager and treasurer. Maurice Shraff, '09, was elected leader of the Banjo Club,

with Harold Lockett, '10, as manager. Nat Coleman continues as leader of the Mandolin Club, while Donald Stevens, '11, was elected manager. Clinton W. Pyle, '09, is the new leader of the Glee Club, with Caldwell as manager.

Cleofan.—On May 22 Mabel K. Babcock, '08, was elected president of Cleofan for the coming school year. Helen McG. Longyear, '09, was elected vice-president, and Rebecca H. Thompson, '09, and Elizabeth B. Babcock, '09, were chosen for the offices of secretary and treasurer, respectively.

British Empire Association.—At the annual meeting the following were elected officers for the ensuing year: president, Thomas A. Tillard, '09, of Hampshire, England; vice-president, Edgerton M. Bettington, '09, Johannesburg, South Africa; executive committee, Frederick R. Faulkner, '09, New Brunswick; Ridsdale Ellis, '09, Leicester, England; Ernest E. Wells, '09, Toronto, Canada.

New York State Club.—May 13 the club held its annual meeting and dinner at the Union. The elections for the coming school year resulted as follows: president, P. D. Terry, '10; vice-president, H. W. Dun, Jr.,'08; secretary, W. D. Green, '09; treasurer, H. A. Higbie, '09.

Pennsylvania Club.—At the last meeting the following officers were elected: president, Samuel N. McCain, '09, Allegheny; vice-president, John S. Pearce, '09, Saltsburg; secretary, Arthur L. Stein, '10, Scranton; treasurer, Raymond W. Jacoby, '10, Wilkes-Barre; executive committee, Walter S. Woods, '09, Germantown; Churchill, '10, and Warner, '11.

Mechanic Arts High School Club.—John T. Tobin, '08, spoke before a number of prospective Institute men entertained at the Union, April 14, by the club during their annual dinner. The next year's Freshmen addressed were members of the graduating class at the high school. Besides these there were present several graduates of the school now studying at Tufts and Harvard, the total number at the dinner being fifty-two. Dr. Parmenter, Messrs. Parish and Fuller, were guests from the school. Rudolph B. Weiler, '08, founder and ex-president of the club, spoke on the club's past and future.

Newton High School Club.—The annual dinner was held at the Union, May 15. President Kenneth Chipman, '08, was the master of ceremonies. The guests were Dean Burton, Mr. Charles D. Meserve, and five Newton High School men who will be at the Institute next year.

New England Intercollegiate Press Association.—The annual meeting was held May 22 at the Hotel Westminster. In the election of officers for next year S. B. Fairbank, of Amherst, was elected president; Miss Marion E. Markley, of Wellesley, vice-president; and C. Turner, of Tech, secretary-treasurer.

ATHLETICS.

TRACK TEAM

Annual Spring Meet.—The annual spring meet was held April 11, at the Field. In most of the races the finishes were very close, and the contest between the four classes was the hottest known in years.

After a very even and hard-fought contest the Seniors won from the Juniors by but two-thirds of a point.

University of Maine.—Technology swamped Maine in the dual meet at Tech Field May 2, by the score of 87½ to 38½. From the very start Tech was away ahead, and at no time was the meet even interesting.

Maine furnished poor competition, partly because a good many of their best men were kept at home by the Faculty on account of the condition of their scholarship.

Brown University.—In a hotly contested meet the Tech track team defeated Brown University May 9, at the Field, by a margin of 17 points. The Institute team scored seven firsts, ten seconds, and six thirds, while Brown captured seven firsts, four seconds, and seven thirds. With one point split between the two teams, the score was 71½ to 54½.

Captain.—Carl William Gram, '09, has been unanimously elected captain of the track team for the year 1908–09.

NEW ENGLAND INTERCOLLEGIATE ATHLETIC MEET

The meet was held this year at Tech Field, the preliminary contests taking place on May 22 and the final contests on May 23. Ten colleges besides Technology took part:—

Dartmouth won the meet with the extraordinary total of 49 points, Bowdoin coming second with 19 points, and the Institute being tied for third place with Wesleyan, each with 18 points. Williams had 16, Amherst 15, Brown 10, University of Maine 4, Trinity 3, Tufts and the University of Vermont 1 point each.

Two records were broken and one equalled in another brilliant performance by Shaw, the greatest hurdler in the college world to-day. The new marks were made in the field events, Palmer of Dartmouth and Horrax, of Williams, sharing the honor of establishing the new figures in the running jump,—5 feet 11¾ inches,—an improvement of one-quarter inch over the mark set by Horrax at Worcester last year.

The following is the total of points:—

First place counts 5, second 3, third 2, fourth 1.

Events.	Dartmouth.	Bowdoin.	Technology.	Wesleyan.	Williams.	Amherst.	Brown.	Maine.	Trinity.	Tufts.	Vermont.
100-yard dash	5	–	–	3	–	3	–	–	–	–	–
220-yard dash	5	–	1	5	–	–	–	–	–	–	–
440-yard dash	1	–	2	3	–	5	–	–	–	–	–
880-yard run	1	–	3	5	–	–	–	2	–	–	–
One-mile run	2	3	–	–	–	5	–	–	–	–	1
Two-mile run	–	5	3	–	–	–	2	–	1	–	–
High hurdles	5	–	–	–	3	–	1	–	2	–	–
Low hurdles	5	3	–	–	–	–	1	2	–	–	–
Shot	3	5	2	–	–	1	–	–	–	–	–
Hammer	8	2	–	–	–	1	–	–	–	–	–
Discus	5	–	1	–	2	–	3	–	–	–	–
High jump	4	–	–	–	6	–	–	–	–	1	–
Running broad jump .	5	–	1	2	–	–	3	–	–	–	–
Pole vault	–	1	5	–	5	–	–	–	–	–	–
Total	49	19	18	18	16	15	10	4	3	1	1

RELAY TEAM

After surpassing all previous Tech performances, the Institute relay team had to be content with second place in the race with Wesleyan and Ohio State in the Penn games, April 25. First place went to Wesleyan.

CROSS COUNTRY

The new cross-country cup which will be competed for annually by the Freshman and Sophomore teams was presented to the Institute at the cross-country dinner on May 20 by F. H. Hunter, '02, on behalf of the alumni. The cup was purchased from the proceeds of subscriptions from the former cross-country men of the Institute and some of the undergraduates.

The cup is a large Tobin bronze trophy, standing eighteen inches high. The bronze was taken from the hull of the "Columbia" when that famous racing craft was dismantled. On one side is a large cTc in raised letters, on the other small raised shields prove a pleasing contrast to the plain engraving. The 1911 numerals are already engraved on the first shield.

Major Frank H. Briggs, '81, accepted the cup on behalf of the Institute.

GOLF

At a meeting of the Golf Club May 5, T. A. Tillard, '09, was elected president for next year, and W. F. Herrick, '11, manager.

MILITARY DRILL

The annual prize drill of the Corps of Cadets was won May 22 by Company C.

The individual drill was won by H. C. Davis, Jr., of Company B, R. E. Runels of Company D taking second honors.

After the drill, according to the annual custom, more than two hundred of the Freshmen gathered in front of Rogers Building. A huge bonfire was built directly below the steps, and the white gloves and collars used during the preceding year were burned in the flames.

THE GRADUATES

ASSOCIATION OF CLASS SECRETARIES OF THE M. I. T.

A special meeting of the Association of Class Secretaries was held at the Technology Club, Boston, on Thursday evening, April 30, 1908. Professor Robert H. Richards acted as chairman. Walter B. Snow, '82, chairman of the Commencement Celebration Committee, stated that, in view of the fact that the annual reception of the graduating class had become a somewhat unwieldy affair, the committee had decided to omit it this year and introduce some new features into the programme of the Pop Concert, which would largely take its place. He also proposed that the class spreads be held from 5.30 to 7.45 on the evening of the Pop Concert in connection with a buffet supper to be served in the banquet hall of the Brunswick. This plan was fully discussed, and the recommendations of the committee accepted.

The committee appointed at the previous meeting to select a managing editor for THE TECHNOLOGY REVIEW to succeed Mr. Munroe, whose resignation had been most reluctantly accepted, reported that a decision had been reached, and the committee requested authority to engage an editor at an annual salary not to exceed five hundred dollars. Mr. Snow's motion to this effect was carried.

Dr. A. A. Noyes, '86, Acting President of the Institute, stated that the Corporation had felt the need of more systematic and better-directed effort in the matter of bringing the Institute and its work before the public, and that the Executive Committee of the Corporation had authorized him to engage for this work the man selected by the Class Secretaries' Committee for the managing editorship of THE TECHNOLOGY REVIEW. It was felt that the editorial and publicity work might very properly be carried on by the same individual, whose office would be the alumni headquarters in the Rogers Building of the Institute.

Announcement was then made that the man selected for the two

positions by the Class Secretaries' Committee and by the Executive Committee of the Corporation was I. W. Litchfield, '85.

The following letter was read by the secretary:—

BOSTON, April 15, 1908.

Mr. FREDERIC H. FAY, '93,
Secretary, Association of Class Secretaries.

My dear Mr. Fay,—It was voted at a meeting of the Executive Committee of the Alumni Association that the President of the Alumni Association be asked to present the question of the reorganization of the Alumni Association to the Association of Class Secretaries, and that the Association be asked to co-operate with the Executive Committee in a consideration of this question.

Yours very truly,

(Signed) WALTER HUMPHREYS,
Secretary.

President W. B. Snow, of the Alumni Association, then outlined the proposed changes in the constitution of that body and the reasons therefor. Under the present arrangement the general business of that organization is transacted just prior to the annual dinner by a relatively small group of men, who hurry through the business as rapidly as possible without the opportunity of giving careful consideration to the several matters of greater or less importance which are presented for action. The Alumni Executive Committee, which deals with special and lesser matters of business throughout the year, is a small body, and therefore not representative of the whole body of the alumni. It is now proposed to place the general control of the affairs of the Alumni Association in the hands of a council, to be made up as follows:—

1. An Executive Committee of eight, elected at large, as at present.
2. The secretaries of all graduate classes or such other class representatives as the classes may select.
3. The secretaries of all local alumni associations or such representatives as may be elected by these organizations.
4. The fifteen term members of the Corporation of the Institute, who are elected by the Corporation from a list of candidates selected by the Alumni Association.

The plan proposed would probably lead to the dissolution of the Association of Class Secretaries, but most of the individual mem-

bers would be given office of real power in the council. It would naturally result in the publication of THE TECHNOLOGY REVIEW as the official organ of the Alumni Association.

In the discussion which followed the proposed plan met with general approval. Upon motion of F. H. Hunter, '02, it was

Voted, That a committee of three be appointed by the chair to co-operate with the Executive Committee of the Alumni Association in considering plans for the reorganization of that Association.

The chairman appointed, as the Committee of the Class Secretaries, Professor C.-E. A. Winslow, '98; H. S. Chase, '83; and Professor C. Frank Allen, '72.

The meeting adjourned at 9.45 P.M.

Attendance, thirty-two.

FREDERIC H. FAY, '93, *Secretary*.

THE TECHNOLOGY CLUB OF NEW YORK

The events of interest at the Technology Club of New York since the last issue of the REVIEW have included three smokers and a dance.

At the smoker on March 28 H. B. Fullerton, '79, entertained us with a picturesque talk on "Technology Methods of Pioneering," telling us how a barren tract of land on Long Island, N. Y., was converted into a fruitful garden. The lantern slides showed the tract first covered with stumps and wild growth, then the process of reclamation, and finally the prize products,—vegetables, fruit, and flowers, the result of applied science. When the Institute gives the honorary degree of Doctor of Science, Mr. Fullerton's name should be called, not only for his splendid work at the "Experimental Station" on Long Island, but because he is a loyal son of Technology.

At the April meeting Allen Hazen, '88, took us on "A Short Trip to Australia," and, aided by a lantern, gave us interesting glimpses of its city, town, farming, and wild life, and very modestly told us of his efficient work in furnishing water supply, despite obstacles of climate and country.

On June 6 Mr. J. Richmond Pitman, who has had an extended experience both in the government laboratories and as manager of one of the largest powder factories in the world, addressed us on "The Manufacture of Smokeless Powder," and supplemented his lecture by an exhibition of specimens and diagrams.

This concluded the season's series of monthly smokers, but on September 26, 1908, the committee, of which Clarence M. Joyce, '03, is chairman, will arrange for a smoker in honor of '08; and members of '08 in or near New York at that time are requested to send their addresses to the secretary, that due notice may be given them.

The Entertainment Committee, of which H. C. Tuttle, '90, is chairman, ended the season by giving a "ladies' night dance" on the evening of May 15 at the Chemists' Club Hall, 108 West 55th Street, our own club-house not affording facilities for such a function. C. R. Place, '02, as chairman of the Dance Committee, made the evening a success in every way, and the courtesy and hospitality of the Chemists' Club were much appreciated.

Our Membership Committee is now under the direction of Francis C. Green, '95; the Committee on New Club-house has Allston Sargent, '98, for its chairman; and Walter Large, '79, is chairman of a new committee on Amendment of Constitution and By-laws, to meet the increasing activities of the club.

The attention of men who have not yet joined the club is called to the following friendly statement, acknowledgment of which is hereby gratefully made, contained in the carefully compiled and interesting "Second Record Book of the Class of '02" recently issued:—

This is the only Technology Club out of the shadow of the Institute that has a club-house of its own, and the class secretary can state from experience that the club-house, though not pretentious, is a centre of loyal Tech spirit and royal good fellowship. Every '02 man and every Tech man, for that matter, who is in or near New York, should be a member.

WILLIAM H. KING, '94, *Secretary*,
36 East 28th Street, New York, N.Y.

THE TECHNOLOGY CLUB OF PHILADELPHIA

The third informal dinner and meeting of the Technology Club of Philadelphia was held at the City Club on Friday evening, April 24. An excellent planked shad dinner was served, which was followed by a very interesting paper by Mr. Eugene S. Foljambe, '01, editor of the *Cycle and Automobile Trade Journal.* Mr. Foljambe traced the development of the automobile, and spoke of the present need of applying stricter engineering methods in the automobile industry. In closing, he explained and gave an actual demonstration of a new process of brazing and welding by means of a hydrogen-acetylene flame. With apparatus furnished through the courtesy of the Ferrofix Brazing Company, pieces of steel were readily welded together.

All '08 men who may settle in Philadelphia or vicinity are urged to communicate with the secretary at once.

PERCY E. TILLSON, '06, *Secretary,*
3411 Walnut Street, Philadelphia, Pa.

THE TECHNOLOGY CLUB OF BUFFALO

The Technology Club of Buffalo held its spring meeting on the evening of April 28. After a substantial dinner and the regular order of business were disposed of, we listened to a highly entertaining talk on the subject of Electric Smelting by Mr. Francis A. J. FitzGerald, of Niagara Falls, one of the few experts in this line, and one who is thoroughly familiar with the subject from the beginning.

Among those present were Messrs. Shedd, Sanders, Watkins, Spaulding, Henrich, Swift, Nagel, O'Connor, and Vogel.

The next meeting will probably be held at Niagara Falls about July 1.

H. A. BOYD, '79, *Secretary,*
Erie County Bank Building, Buffalo, N.Y.

WASHINGTON SOCIETY OF THE M. I. T.

The annual dinner, the principal event in the yearly calendar of the Washington Society, took place on Wednesday evening, April 21, 1908.

Dr. Arthur A. Noyes was the chief guest of the society. His interesting address was listened to most attentively by an appreciative audience of over sixty of the Institute alumni and several distinguished guests. He gave a description of the development of the Institute during the past year and the proposed lines of development in the future. The three main lines which will be followed are: (1) the removal to a new site, and the rebuilding of the Institute; (2) developments in courses and methods of instruction; and (3) the development of student life and activities.

Dr. Noyes spoke in his most effective style, the keynote of his talk being the need of an aggressive policy in the future life of the school. This sentiment in particular, as well as the address as a whole, was most sincerely applauded.

The Hon. George Otis Smith, director of the Geological Survey, made a humorous address on "The Tech Graduate as a Water Man." He referred to the fact that the Tech men on the Geological Survey staff were "running to water," since most of them seem to be connected with the irrigation and reclamation work in the West.

The Hon. C. R. Thomas, member of Congress from North Carolina, delivered an oration on "The Technical Graduate in the South." He eloquently presented the engineering problems and possibilities of the new South as a field for the young engineer.

The Hon. James M. Miller, member of Congress from Kansas, discussed "The Civic Duties of a Technical Graduate" in very effective language.

The Hon. S. W. McCall, member of Congress from Massachusetts, responded to the toast "Massachusetts." He proved one of the most entertaining of speakers, and paid repeated tributes both to the State and to the Institute.

The Hon. Butler Ames, '96, also member of Congress from Massachusetts, was unable to be present and deliver the greeting, but his absence was, to a large degree, compensated for by the

skilful manner in which the Hon. F. H. Newell, '85, director of the United States Reclamation Service, developed the program for the evening in his capacity of toastmaster.

Those present were: Dr. Arthur A. Noyes, '86; Hon. F. H. Newell, '85; Hon. S. W. McCall; Hon. James M. Miller, Hon. C. R. Thomas, Hon. George Otis Smith; Francis E. Cady, '01; R. H. Bolster, '01; W. Cole, '87; A. E. Adams, '90; W. U. C. Baton, '04; Robert Mayo, Jr., '02; E. F. Allbright, '04; William McEntee, '04; A. L. Whitmarsh, '05; H. S. Bailey, '05; F. W. Guibord, '05; H. W. Kenway, '05; F. E. Fowle, '94; C. G. Abbot, '94; W. I. Swanton, '93; M. O. Leighton, '96 (president); W. P. Haynes (guest); A. M. Holcombe, '04; C. R. Haynes, '04; M. E. Weaver, '04; C. F. Willard, '01; W. J. Gill, Jr., '04; Robert B. Sosman, '04; Proctor L. Dougherty, '97; Ferdinand T. Schneider, '92; Frederick W. Wood, '77; William W. Stevens, '98; John Boyle, Jr., '01; Frederick W. Southworth, '00; Mark E. Taylor, '98; Frederick Bachmann, '97; Harold A. Kingsbury, '07; G. W. Stose, '93; John Allen Davis, '07; Edward L. Wilson, '06; H. A. Terrell, '06; Jos. T. Lawton, Jr., '06; N. Loring Danforth, '05; Allen Pope, '07; Grandville R. Jones, '07; Henry A. Pressey, '96; Martin Boyle, '98; Vernon M. Peirce, '96; Jos. J. Moebs, '98; J. E. Woodwell, '96; J. W. Clary, '96; G. W. Perley, '96; H. H. W. Keith, '05; F. Charles Starr, '05; H. M. Lynde, '05; W. M. Beaman, '89; William J. Rich, '84; R. B. Dole, '04; N. C. Phalen, '99; Francois E. Matthes, '95; H. N. Parker, '94; Frederick A. Kendall, '87; Arthur Cutts Willard, '04 (secretary).

Mr. Frederick W. Wood, president of the Maryland Steel Company, and Mr. Joseph T. Lawton, Jr., came over from Baltimore for the dinner. Dr. Arthur A. Noyes, President of the Massachusetts Institute of Technology, and Mr. C. R. Haynes and Mr. W. P. Haynes came from Boston.

The society is deeply indebted to its president, Mr. M. O. Leighton, chief hydrographer, United States Geological Survey, for a programme replete with the names of men of national reputation.

The very successful outcome of the dinner has created a feeling that an alumni society has properly fulfilled its function when a

single event during the year has developed general interest on the part of the whole membership. We congratulate ourselves that our society has accomplished this result.

ARTHUR CUTTS WILLARD, '04, *Secretary*,
The George Washington University, Washington, D.C.

THE TECHNOLOGY CLUB OF NEW BEDFORD

The last meeting of the Technology Club of New Bedford for the season of 1907–08 was held on May 28 at the home of Charles R. Allen. Robinson, '98, and Wing, '98, attended the '98 class dinner at the Copley Square on June 8. LeRoy A. Swan, '97, has been appointed chairman of the Board of License Commissioners. Robinson, '98, was married on the 8th of April to Miss Dolliber, of Brookline.

CHARLES F. WING, JR., '99, *Secretary*,
34 Purchase Street, New Bedford, Mass.

TECHNOLOGY CLUB OF SOUTHERN CALIFORNIA

So far as the secretary has been able to learn, the first gathering of Tech men in the South-west occurred in Los Angeles on Dec. 16, 1907. There were eighteen men present, and the evening was spent in eating, singing, and informal talks on the advisability of forming a permanent organization of Tech men in Southern California. The meeting was unanimously in favor of the proposition, and the following officers were elected for the current year: W. T. Knowlton, '93, president; James W. Johnson, '82, vice-president; and Arthur B. White, '00, secretary-treasurer. The officers were appointed a committee to draft a constitution and present at the next meeting. Professor Lodge was a guest of the association, and gave a very interesting and instructive talk on Institute affairs.

The first regular meeting and banquet of the Technology Club of Southern California was held on Saturday evening, June 6, 1908, at the University Club in Los Angeles, Cal., and presided over by W. T. Knowlton, '93, president of the club. Twenty-two men sat

around the festive board, which was laid out in the form of a "T" in honor of Technology, and many old acquaintances were renewed.

Mr. Samuel Storrow, '90, entertained those present with a very interesting paper expressing his views on the long-talked of union of Harvard University and M. I. T. He was very much in favor of such a combination, and should speak from an unbiassed standpoint, being, as he said, a graduate of both institutions. His main argument was that the Tech man at graduation was lacking in that one essential element of the successful man of to-day,—the ability to express his views clearly, concisely, and forcefully. It was generally conceded that Mr. Storrow had stated the greatest weakness of Tech graduates, but it was the general opinion that this could be remedied more efficiently than by means of a combination with Harvard.

Mr. W. K. Gaylord, '93, who is a professor at Throop Institute, outlined in a general way the past history and the proposed future expansion of Throop, and expressed his belief that this expansion and development would be along the lines already laid down by his Alma Mater.

The society then listened to an interesting and instructive talk by F. H. Merrill, '93, on the manufacture of soap, past and present, starting with the "way our grandmothers made soap," and ending with the present complicated and elaborate methods, full of all sorts of chemical formulas and reactions.

The business part of the programme included the reading of the minutes by the secretary, which were approved, and the presentation of a constitution, which was unanimously approved and adopted. The constitution states that the objects of the society are: first, to bring all Institute men closer together, and to keep alive the interest and spirit of Technology; secondly, that all Tech men may become better acquainted socially, and mutually helpful to one another; and, thirdly, for the professional improvement of its members. It also states that any one who has been connected with the Institute one year is eligible to membership, and that the society shall hold two regular meetings each year, one on the first Saturday in June and one on the first Saturday in December. The society herewith

extends an invitation to any Tech man who may be in this vicinity at any of its meetings to be present.

The dinner broke up with a toast to Technology, followed by Tech yells and Tech songs. The secretary has a list of about forty-five men in Southern California, and he would be glad to receive information in regard to any more who are living in this locality.

ARTHUR B. WHITE, '00, *Secretary*,
606 San Fernando Building, Los Angeles, Cal.

THE M. I. T. CLUB OF CENTRAL NEW YORK

After a dinner tendered to Professor A. H. Gill by the alumni in the vicinity of Syracuse, the M. I. T. Club of Central New York was formed.

Those present were W. E. Hopton, '91; H. W. Jordan, '91; A. T. Taylor, '94; H. F. Hawley, '96; I. S. Merrell, '96; E. C. Witherby, '97; F. D. Ingalls, '01; W. G. Wildes, '01; Charles G. Glenn, '03; David Mohler, '03; W. W. Cronin, '04; J. P. Barnes, '05; R. W. Collins, '05; J. Cheney Baker, '05; Ernest Smith, '06; Joseph R. Vedder, '06; H. H. McChesney, '07; Harry Burhans, '07; and F. C. Ware. The news of the Institute given us by Professor Gill was of great interest to all, and his presence aided greatly in the forming of the club.

Since then a second meeting has been held on April 11, 1908, at the residence of Mr. Walter E. Hopton, '91, which was well attended. At this meeting we had the pleasure of entertaining, as the guest of honor, the Bursar, Mr. Frank H. Rand. Mr. Rand's talk was of particular interest to the older alumni, as much of the social side of Institute life which it covered has developed in late years. The club had also as guest Mr. J. William Smith, who is always a staunch friend of the Institute.

Since the first meeting F. C. Moore, '91, and Edwin Bonta, '07, have joined the club.

IRVING S. MERRELL, '96, *Secretary*,
North Franklin and Plum Streets, Syracuse, N.Y.

THE TECHNOLOGY CLUB

On the eleventh evening of the season, Tuesday, April 21, Mr. E. T. Hartman, secretary of the Massachusetts Civic League, gave a smoke talk on "Town Planning and Housing Reform," and spoke of the prevention and cure of slums. Last summer Mr. Hartman travelled over Europe, studying model industrial towns, such as Port Sunlight and Garden City. He also made a study of slum districts in the large manufacturing cities of England and Germany. The lecture was illustrated by many interesting lantern slides.

In accordance with the revised By-laws, the annual meeting of the Technology Club was held on Wednesday, May 6, at 7.45 o'clock, to hear reports, elect officers for the ensuing year and consider any other business coming before the club.

Reports for the six months since October 1, 1907, were read by the secretary and the treasurer. The total membership was given as 716. The efficient work of the new steward, Mr. A. F. Sidney, has brought out many signs of approval from members of the club. The treasurer's report substantiated this feeling by showing a greatly improved balance for the period since Mr. Sidney was engaged.

The following officers were unanimously elected for the ensuing year: president, James Flack Norris; vice-president, Frank Henry Rand; secretary, Robert Seaton Williams, '02; treasurer, Augustus Herman Gill, '84.

Members of Council for three years: Henry Fay; Seth King Humphrey, '97; Frederick Revell Kneeland; Joseph Hyde Knight, '96; Harry Walter Tyler, '84. In accordance with the amended by-laws the president, vice-president, secretary, and treasurer do not enter upon their terms of office until June 9, Graduation Day of the Massachusetts Institute of Technology.

On the twelfth evening of the season, Wednesday, May 6, immediately after the annual meeting, Professor Louis Derr gave a smoke talk on "Recent Developments in Color Photography." The subject was well illustrated by a carefully selected set of colored lantern slides. The attendance was 105.

At all these club evenings members have the privilege of inviting guests.

ANGELO T. HEYWOOD, '06, *Secretary*,
83 Newbury Street, Boston, Mass.

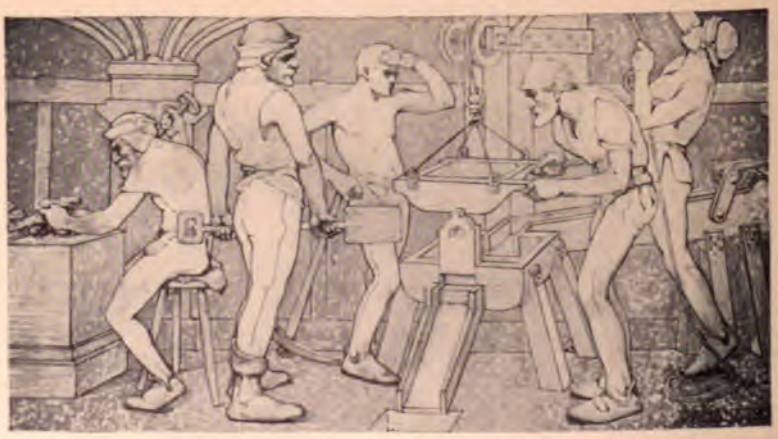
1895 HUNTINGTON HALL PANELS

On June 8, at the Class Day exercises of the class of 1908, four panels were unveiled in Huntington Hall by Mr. Rapelye, president of the graduating class. These panels are over the entrance doors, at the right and left of the platform. The subjects are Chemistry, Mining and Metallurgy, Architecture, and Electrical Engineering. They are known as the class of 1895 panels, as an appropriation to cover the expense of making them was made by the class at its decennial dinner in 1905. The actual work, however, on the drawings was done by the advanced students of the Architectural Department under the direction of Mr. W. Felton Brown, the instructor in freehand drawing, who also had charge of the six panels unveiled in 1905 as a memorial of the class of 1905. This completes the frieze on the front wall of Huntington Hall. It is now up to the other classes and friends of the Institute to complete the mural paintings around the hall. There are one small and four large panels on the west wall to be filled, and the same number on the east wall. There are two large and six small panels and spandrels over three windows to be filled on the north wall. These panels can be put up at an expense of $50 to $100 for one or more, provided they can be executed by the students as before, so that any contribution will be taken care of by putting up as many panels as possible in the hall. To those who cannot turn to the article on "Huntington Hall Frieze" in THE TECHNOLOGY REVIEW, Volume 7, No. 2, April, 1905, which gives reproductions of the 1871 frieze, the following notes may be of interest. In 1898 the wall decoration, showing in outline emblematic figures representing the different arts, sciences, and technical processes, was painted over during alterations. In 1904 the original sketches for that frieze, made by Paul Nefflen, were purchased through the interest and subscriptions of twelve

Tech men and others who believed there was something in them worth preserving. These have been used as an inspiration in carrying out the present paintings. The accompanying photographs of the frieze show the character of the work, which is carried out in warm brownish tones, kept very flat. The panels are interesting in composition, and also are in harmony with the central panels, both in color and drawing. Any one who is at all interested in assisting in carrying out this frieze may communicate with Dean Burton or Mr. W. Felton Brown at the Institute, or with the undersigned,

FRANK A. BOURNE, '95.

SECTIONS OF HUNTINGTON HALL FRIEZE PRESENTED BY THE CLASS OF 1895



SECTIONS OF HUNTINGTON HALL FRIEZE PRESENTED BY THE CLASS OF 1895

'84; C. L. Brown, '88; Whiting, '89; W. A. Tucker, '93; Brockunier, '93; Jacobs, '97; Hurter, '98; and Heywood, '06.—The University of Missouri at Columbia conferred upon Robert H. Richards the degree of Doctor of Laws on June 3, 1908.

1873.

SAMUEL E. TINKHAM, *Sec.*, City Hall, Boston, MASS.

The following is from the *Milford Gazette* of March 6, 1908:—

The community was shocked last Monday to learn of the death of Frederick L. Fisher, which occurred at an early hour on that day at his home, 35 Howland Street, Roxbury. Mr. Fisher was in town last Friday, apparently in his usual health, and had attended to his business here and met many of our people. His death was caused by acute indigestion affecting a weak heart. He was born in Medway Jan. 12, 1853, the seventh child of Hon. and Mrs. Milton Metcalf Fisher and the grandson of Hon. Luther Metcalf. He was educated in our schools, and in 1873 graduated from the Massachusetts Institute of Technology as a civil engineer, which profession he followed only a short time. About 1876 he engaged in the general store business in this place with Leonard E. Taylor, under the firm name of Fisher & Taylor, selling out two years later to E. W. Tyler, of Rockville. While in this business Mr. Fisher met with an accident, falling from a roof at his home, and so injuring one of his legs that it had to be amputated. He then entered his father's insurance office, and later succeeded to the business, which he had greatly enlarged, adding a Boston office to the local one. He was well known in insurance circles throughout the eastern part of the State. In 1887 he was elected treasurer of the Medway Savings Bank, which position he held for ten years, resigning April 22, 1897. He was a trustee of the bank at the time of his death and a trustee of Sanford Hall. Early in life he became a member of the village church, and was for many years clerk of its society and superintendent of its Sunday-school. He was affiliated with Norfolk Lodge, Knights of Honor, and a past grand of Medway Lodge, Odd Fellows. In 1873 he married Miss Caroline P. Lyon, of Boston, and to them a daughter was born in 1880.

During his business life he had managed many estates as executor and guardian, and was well versed in probate matters and an authority on insurance of all description.

His funeral took place Wednesday afternoon from his home in Roxbury and was conducted by Rev. Dr. Vincent of the Walnut Avenue Congregational Church, to which he transferred his membership several years ago. Many of his Medway friends attended. Interment was made at Forest Hills Cemetery.

Mr. Fisher enjoyed a deserved reputation as an honest man, and will be greatly missed by family, friends, and acquaintances.

1877.

RICHARD A. HALE, *Sec.*, Lawrence, Mass.

The class of '77 followed the suggestions of the committee in relation to holding reunions at Commencement time, and the secretary sent out notices that a reunion would be held on Monday, June 8, at the University Club, Boston. The members who attended were Gray, Hale, Hibbard, Jenney, Mudge, and Williston. Many regrets were received from those unable to attend. A social meeting and dinner was held, with no formal speeches. Kittredge was unable to attend, having had the misfortune to break his arm in an accident some weeks previously. He is rapidly recovering.—Swain has been recently appointed by President Roosevelt on the Commission of Inland Waterways, which is now a permanent body. He also received the degree of Doctor of Laws from New York University last year.

1878.

LINWOOD O. TOWNE, *Sec.*, Haverhill, Mass.

While thirty years has come around since graduation, the anniversary reunion will not be held till winter. Members of the class, however, turned out for the June 9 Pop Concert better than ever before. There were present: Baker, Bradford, Collier, Edwards, Higgins, Robertson, Rollins, Sargent, Schwamb, Williams, Towne. The experience at the concert was a new one for many of those attending, and a revelation of the change from '78 to '08, so far

as concerns graduation activity.—The secretary had the honor and pleasure of attending the complimentary dinner given June 6, at the University Club, to Professor Richards by old members of Course III. and others.

1885.

I. W. LITCHFIELD, *Sec.*, 88 Broad Street, Boston, MASS.

The '85 class dinner was held at the Hotel Bellevue, Saturday evening, April 25. Those present were: Bartlett, Fiske, Hildreth, Little, Litchfield, Morss, Pickernell, Pratt, Pierce, Plaisted, Rawson, Steele, Talbot, Worthington, and White. President Pickernell presided. Talbot gave us some very interesting and welcome news about the Institute, which was supplemented by Morss. Little told us something about the methods of formulating specifications for coal for the school board, and Plaisted described the new locks at the Charles River dam. The dinner was otherwise pleasantly informal, the conversation turning upon news from the absent ones. A. Tenney White, of Manville, R.I., was elected president for the coming year.

On the Monday following the class dinner several members of the class took advantage of Plaisted's invitation to inspect the engineering operations of the Charles River Basin Commission, for which he is electrical engineer. Plaisted showed us the operation of the locks and the drawbridges, and after an examination of the work at the dam the party took the commission's launch, and inspected the work as far up as Stony Brook Creek.

Everett Morss is now a member of the Corporation, having been elected by ballot of the alumni, and selected from the candidates thus elected by the Corporation.

Dave Baker was in town during June, to see Mrs. Baker and the children off for Europe.

F. H. Newell is one of the eleven members of the Inland Waterways Commission named in June by President Roosevelt. Professor George F. Swain, of the Institute, is also one of the members. In a recent number of *Harper's Weekly* appears a group of the

members of the Congress for Preserving our Natural Resources, which was recently convened by President Roosevelt at Washington. Among the few lay members who were present was Newell, who appears in the picture.

The Tech recently gave a dinner at the Westminster, to which all former members of Tech boards were invited. Mr. Little, who was present, suggested that a permanent organization of Tech editors be formed. The suggestion was carried out, and Mr. Little is chairman of a committee to make proper arrangements.

Judge John W. McKim, father of A. R. McKim, died after a short illness, June 9. Judge McKim was one of the oldest jurists of the State, and had reached the age of eighty-six years. His term on the probate bench extended for thirty years, during which time about 90,000 cases were acted upon. The *Transcript* says that probably no judge sitting in the Commonwealth was held in more affectionate regard than Judge McKim.

'85 joined with '86, '87, and '88 in a spread at the Brunswick on the evening of the Pop Concert. There were nine at the concert, which included Little, Frazer, J. L. Kimball, Merrill, Bartlett, Steele, Talbot, Homer, Pierce, and Litchfield.

1886.

PROF. ARTHUR G. ROBBINS, *Sec.*, Mass. Inst. of Tech., Boston.

'85, '86, '87, and '88 joined forces in the alumni meeting at the Brunswick on June 9, and went from there to the "Pops." The '86 men present were Anthony, Bartlett, Locke, Miller, Noyes, Robbins, J. M. Smith, and S. F. Smith.—Clifford has recently been elected a member of the board of managers of the American Institute of Electrical Engineers.—F. E. Foss and Miss Louise Rust were married June 10 at Cleveland, Ohio. Professor and Mrs. Foss will reside in Pittsburg, Penn.—The degree of Doctor of Laws was recently conferred upon Noyes by the University of Maine.

1887.

EDWARD G. THOMAS, *Sec.*, 239 West 103rd St., New York, N.Y.

Todd has resumed the position which he formerly occupied of local manager of the General Electric Company at Baltimore.—Tripp is now connected with the Single Stave Barrel Company at 131 State Street, Boston.—Guild is news editor of the Boston *Globe*.—Draper has recently issued a résumé of his views on the pending questions of the day relating to the currency, labor unions, trusts, the tariff, socialism, in the form of a book of 250 pages entitled "More." He discusses the prevailing condition of affairs from the basis of his extensive manufacturing experience, and offers some suggestions for reform in currency and industrial matters. It is a most interesting contribution to the discussion of the problems which confront our country, and is worthy of attentive reading. —The class assembled for its annual meeting and dinner at Young's on the evening of February 21 with the following attendance: H. S. Adams, W. H. Brainerd, H. F. Bryant, Cameron, Carpenter, Coburn, Crosby, Draper, Fish, Gerrish, Lane, Northey, Sears, Sever, Spaulding, Taintor, E. G. Thomas, Fred Thompson, Tripp, Very, Wakefield, W. A. Whitney, and Young. Draper, acting temporarily as toastmaster, called on Thompson, who in a few choice and fervent remarks presented to Jules Cameron a silver loving cup as a lowly token of our appreciation of his hospitality at Chebacco Island on the occasion of our twentieth celebration last June. After the usual reports of the secretary and treasurer the following officers were chosen for the ensuing year: president, H. S. Adams; vice-presidents, B. C. Lane and Fred Thompson. The evening was spent in a discussion of the educational policy of the present day, both of the public schools and of the Institute. The discussion was of such interest that a committee was appointed to meet and consider any suggestions that might be offered to it, with power to call upon the class to consider the wisdom of presenting such suggestions or the results of the committee's work to the Institute Corporation or Faculty.

1889.

PROF. W. E. MOTT, *Sec.*, Mass. Inst. of Tech., Boston, MASS.

The class was unusually well represented at the "Pop" concert this year, more than a dozen men being grouped around the '89 table, including Crane and Smythe, who have not met with the class since graduation.—A. L. Davis now has his office in the Hudson Terminal, 30 Church Street, New York City.—Geo. C. Whipple, whose new address is 103 Park Avenue, New York City, recently addressed the Biological Club of the Institute upon the subject of typhoid fever.—W. H. Kilham is a member of the recently organized Brookline Improvement Commission. His firm received the commission to design the new Haverhill High School, which is estimated to cost $275,000.—W. S. Johnson has recently made a report upon a new water supply for the city of Lynn.—Kilham & Hopkins have just been chosen by the new Chelsea Board of Control as architects for the first public building to be built since the fire,—a twenty-four room school-house.

1890.

GEORGE L. GILMORE, *Sec.*, Lexington, Mass.

Colonel Hayden has recently purchased the steam yacht "Revolution" from F. Augustus Heinze. The "Revolution" was built in 1902.—C. W. Rice was a guest at the dinner of the engineers in Washington in May.—Messrs. Loring, Royce, and Hayden have been elected directors of the Lamson Consolidated Store Service Company.—Colonel Hayden, who has been a director of the Bank of the Republic, has now become a director of the Shawmut Bank, which has recently absorbed the former. Colonel Hayden is also treasurer of the Massachusetts Olympic Fund now being raised.—The address of H. C. Slater is Ridley Park, Pa.—Edward F. Bragg's address is now 17 Covington Street, South Boston, Mass.—Charles Neave's office address is 5 Nassau Street, New York City.—

Billy Poland is vice-president of the Philippine Railway Company, with headquarters at Manila, P.I.—Colonel Hayden is a director of the Utah Copper Company, as well as others too numerous to mention.—Arthur Adams is at 106 New Bond Street, London, England.—S. A. Moss has removed to Alameda, Cal.—Fred Royce's Boston address is 84 State Street.—The marriage has been announced of Rev. Willard H. Roots on Tuesday, April 21, to Miss Katherine Philip at Pullman, Wash., where Roots is rector of the Episcopal church.—Guy Emerson has been appointed superintendent of streets by Mayor Hibbard of Boston, and is undoubtedly well qualified for the position.—Mr. and Mrs. H. M. Goodwin will spend the summer abroad.—Mr. C. G. Abbot, the director of the Astrophysical Observatory of the Smithsonian Institution, delivered before the Washington Academy, March 24, an address on "Recent Studies of the Sun." Calvin W. Rice, secretary of the American Society of Mechanical Engineers, was a special guest of President Roosevelt at the Conference of the Governors in Washington, May 13 to 15, to discuss the Conservation of our Natural Resources. Mr. Rice has been assisting in this movement, and was instrumental in getting up a meeting of the engineering profession in New York, which was addressed by Dr. W. J. McGee, secretary of the Inland Waterways Commission, Professor Swain, Dr. W. F. M. Goss, and Dr. Henry S. Pritchett. Professor Swain has been especially active in this movement, and his services have been recognized by an appointment on the National Commission.

1891.

HOWARD C. FORBES, *Sec.*, 88 Broad Street, Boston, Mass.

The class dinner was held at the Algonquin Club on Monday, June 8, at which eleven of the fellows were present: F. C. Holmes, Dana, Cunningham, Alley, Tyler, Jere Campbell, Trowbridge, Young, Garrison, Howland, and Forbes. Dana explained some interesting facts about the Chelsea fire. Garrison told about the progress with the choralcelo.

At the Pop Concert the next night the following were present: G. A. Holmes, Kimball, Capen, Bryant, Cunningham, Alley, Wilson, H. C. Bradley.

Edward Cunningham, the treasurer of Samuel Cabot, Inc., writes in regard to their plant, which was in the path of the conflagration in Chelsea on April 12 last:—

Our main plant consisted mostly of low brick buildings with tile roofs, supported by unprotected steel beams, although we had a few frame buildings.

We also had many tanks containing creosote, benzol, and coal and gas tar. There were also in the yard a large number of wooden barrels, either empty or containing coal-tar pitch.

Our plant was one of the last to catch fire, but finally the shower of sparks started the frame buildings, and then the flames swept through the whole plant, burning most of the combustible material.

The brick walls and tile roofs were mostly left intact, but where there was much combustible material in the building the unprotected steel beams collapsed.

The tanks in the yard were subjected to a fierce heat, so that a few collapsed; but the majority were but little damaged, and can be used again.

Our experience shows that tanks on solid concrete foundations with metal roofs and suitable vents are practically safe, and tanks containing even benzol were left unharmed, although standing within a few feet of tanks which were burned to the ground, owing to less perfect roof covering or foundations.

We have already made big strides in rebuilding, and with this experience feel that we can eliminate the chance of another serious fire in our plant.

Billy Dart is president of the Rhode Island Tool Company, and says:—

I don't know what I can say beyond the mere fact that the stockholders of the Rhode Island Tool Company had a brain-storm last February, and made me president at the beginning of one of the worst business years the country has ever seen, and now I am having brain-storms and cold feet and all sorts of nervous symptoms.

1892.

PROF. WILLIAM A. JOHNSTON, *Sec.*, Mass. Inst. of Tech., Boston.

The following men were present at the banquet and "Pop" concert Tuesday, June 9: Bowen, Burnham, H. J., Carlson, Curtin, Derr, Dresser, Dudley, Fuller, Ingraham, Johnston, Marcy, Metcalf, Pettee, Wallace, C. F., Waterman, R.—The following article appeared in the Boston *Herald* April 15, 1908:—

Frank Edson Perkins, formerly of Boston, an architect, with an office in New York, has been awarded the first prize of $5,000 for plans submitted for the proposed $3,000,000 capitol building of San Juan, Porto Rico.

The competition came to an end and the awards were announced yesterday. Ritchie Abbott, of New York, received the second prize of $2,000, and H. L. Beadel, of New York, the third prize of $1,500. There were 135 competitors. The committee on awards was composed of American architects.

The winning design calls for a low dome over Greek Doric columns, the whole to be built of re-enforced concrete, with decorations of marble. Word has been sent to Mr. Perkins, who is at the present time in New York, to go at once to Porto Rico to confer in reference to contracts for the building, which probably will be erected in accordance with the prize-winning plans.

Frank Edson Perkins was born and educated in Boston. He graduated from the Massachusetts Institute of Technology in 1892, and at once went abroad. After eight years of travel and study he received his degree from L'Ecole des Beaux-Arts. He at once was made assistant professor of architecture in the University of Pennsylvania, where he taught for four years, meanwhile engaging in the practice of his profession in New York City. In 1902 he left teaching, and now conducts an office under his own name in New York. He has a mailing address and desk room in Boston, and visits this city several times a year for long periods.

His parents, Mr. and Mrs. Charles W. Perkins, live at 72 Westland Avenue, where their son stays when he is in town.

1893.

FREDERIC H. FAY, *Sec.*, 60 City Hall, Boston, Mass.

Somewhere in this chosen world, thousands of leagues from the marts of trade,—although the geographies claim that it is but six miles from the city of Lowell,—parting the scintillating waters of the Merrimack, is a beautiful island overrun with a rambling undergrowth of charming vistas, where might be a wondrous golf course if one would take notice, and governed by a beneficent generation who have for years been devoting themselves to the beautifying of this lovely spot for the delectation of the class of '93 on the occasion of its fifteenth anniversary. From the piazza of the picturesque club-house, located at the northern end of the island, is a beautiful sweep of river and rolling country on one side, and on the other towering pines and shady lanes that make up the ninety acres of the Vesper Country Club's domains.

On the eventful morning of June 8 there was an unwonted stir just across the river, which evolved itself into the first delegation of the class alighting from the fast Canadian express, which had stopped under a spreading elm-tree for our special convenience. Those who alighted from the train were: Ashton and Whiston from New York; Dawes, Fay, A. L. Kendall, Keyes, Latham, Pickert, Taintor, with our guest, "Ike" Litchfield, '85, abducted for the occasion; also E. B. Carney, to whom the class was indebted for the hospitality of the club; and S. H. Brockunier, who came from Wheeling, W. Va., for the celebration. The delegation was met by official representatives from the Country Club, bearing the stars and stripes and the historic orange and black banner of the class of '93. From this point the island is reached by a suspension footbridge of remarkable design, with a span of 550 feet and a width of about 46 inches, which contorted itself into sinuous curves under the load of the '93 procession, as it wended its triumphal way. We have evidence to show, however, that its peculiar gyrations were due to the structure, and the word "load," as used above, should be invested with no ulterior significance.

According to programme we were at once assigned rooms, and soon the "Old Clothes Brigade" was mustered on the south piazza, whence a line of forced march was taken to the Bungalow, which, because of its peculiar attraction, became the centre of interest, and from this time on it served as the general headquarters. Here we were joined by "Billy" Page and Fred Dillon, who came over from Fitchburg, and by J. C. Abbot of Westford, Phinney of Warren, and H. R. Sargent of Graniteville. After the Bungalow had been officially dedicated to the services of the class, there was some frisking about after a pudding ball, until the arrival of the noon train, bringing Blood, who came over from New York, Crosby, Norris, and E. S. Page. Thereupon lunch was served on the north veranda, twenty-one men being then present. After lunch, during which Baxter joined the party, Crosby sounded the assembly, and there was a battalion drill under the command of Adjutant Phinney of the Freshman battalion. After a number of intricate evolutions, which included "counting fours," "right dress," "right-forward fours right," and some others, which were, by the way, faultlessly performed, the battalion marched the entire length of the island to a ball-field, which from that moment became famous. The memorable contest was between the "Cardinals," captained by Fred Dillon, and the "Grays," led by Jack Abbot, Litchfield being unanimously chosen as umpire because of his profound knowledge of the game. Although on the surface everything seemed amicable, there was much hot blood, for the sun was fierce, and the "Grays" might have given up the fight but for the brave and persistent effort of Captain Abbot, to whom success is perhaps as much due as to the impartial decisions of the umpire. The excitement caused by this game is still so vivid we feel that the details cannot be properly chronicled until they are set down more deliberately in our own class publication. During the game we were joined by Bemis, W. S. Forbes, H. R. Sargent, of Schenectady, N.Y., and Cadwell, of Nashua, N.H. One member had been drawn as a juror, but, when he told the court of his engagement with the class of '93, the venerable judge, recognizing the greater importance of this unusual celebration, allowed him a week's absence. This

illustrates the wisdom of the Massachusetts bench, not only in its recognition of the importance of the event, but in allowing four days to recover from it.

There was an "idle hour" at the Bungalow following the game, but not for the attendants. At this time S. A. Breed, sun-burned almost to a cardinal hue, joined the party, having made a canoe trip that day down the river from Manchester.

The fifteenth annual meeting of the class was held on the Bungalow piazza at 6.30 o'clock, with President Pickert in the chair. The usual reports were read and approved, and a class contribution to the Association of Class Secretaries was voted, and officers for the ensuing year elected as follows: Henry A. Morss, president; George B. Glidden, first vice-president; Edward B. Carney, second vice-president; Frederic H. Fay, secretary-treasurer; Leo W. Pickert, assistant secretary. The death by accident of Walter Sherman Whiting, on Nov. 2, 1907, was reported by the secretary, who read a memoir of Whiting which had been published in the January number of the REVIEW. It was voted to dedicate a page of the class record to Whiting's memory. The secretary reported progress about the forthcoming Class Catalogue, and, after a vote of thanks to the retiring president and secretary, the meeting adjourned with the announcement that dinner was waiting.

Having relieved ourselves of this weight of care, we marched to the attack under Phinney's command, escorted by a Lowell orchestra, with H. R. Sargent working overtime at the bass drum.

It was just at time of sunset. The snowy table was laid on the north veranda, partly in the open air. Around was the charm of river and country entering into repose at the close of day. From the further boundary of the lawn came the music of stringed instruments, and lighting up the scene were numerous flambeaux which made weird shadows among the trees. The menu provided by the steward was tempting and delicious, and the service everything that could be desired. In fitting connection with the caviar and onions, President Pickert introduced Litchfield, with his umpirical honors thick upon him, who presented the cup, offered by one of

the members, to the victorious ball team, in a very earnest and appropriate speech, explaining that it had greater significance than its weight of bullion and its ornate chasing, that it would be handed down to posterity, and that some time in the future a younger generation of the class of '93 would strive for and win it, as had the valiant "Grays." He announced that it was modelled after the famous America's cup, and that it would be suitably inscribed with the names of the victors. Jack Abbot accepted the cup on behalf of the "Grays," and, as he removed the cover and disclosed it to view, it was seen to be indeed a wonderful creation, for it stood about eighteen inches high and was made of a varied collection of tin cans soldered into an unsymmetrical whole. During dinner the orchestra played several Tech songs, which were sung with zest by the assembled multitude. When the game course was reached, the removal of the cover of a large platter in the centre of the table disclosed a game rooster wearing the class colors. The bird immediately hopped up, and, gazing about him, crowed vociferously. This being taken as a good omen, the class rose *en masse* and cheered long and loud, the rooster joining in with great heartiness. He then began a triumphal march up the table over dishes and glasses to the president's seat. The club will keep the bird, and next year he will be ready to meet the rooster of '94, should that class follow '93's precedent for a quindecennial outing, and feel "cocky" over it.

As the evening advanced, the piazza was prettily decorated by incandescent lights, installed for the occasion. Letters from absent members were read, including one from our former English instructor, Fred Parker Emery, now a professor at Dartmouth, who was the most popular teacher the class ever had. There was no formal speech-making, but Litchfield gave a heart-to-heart talk upon Institute matters, and many good stories were told.

Later on in the evening there was an "artful dodger" contest in the Bungalow to test the marksmanship of the party. Each man successively poked his head through a hole in the canvas, and the next man on the list had the opportunity of bombarding him with some very soft balls. Breed won the pool, making the best

score with a total of three hits out of a possible eight, which was very creditable for that hour of the evening.

Abbot and Forbes, who had come in their motor cars, had to leave that night, taking some of the fellows with them. The others sat in the moonlight of the warm summer's night until the arrival of A. L. Kendall, who had to go into Boston that evening on military duty.

Tuesday was another perfect day. The early risers began to appear between five and six, three or four fellows being obliged to leave on the early train. For those who remained the breakfast table was spread in the open air, and during the early morning N. P. Cutler, Jr., joined the party.

The forenoon was devoted to a general "schwatfest" competition for three prizes offered by two members of the class. It was a handicap game, each man's rating being determined by his score in a try-out on the first hole. Then the crowd started to play the whole course, certain men with the highest scores dropping out from hole to hole, until at the ninth hole only Brockunier and Carney were left in the running. Brockunier won out by a close margin, and he and Carney received the first and second prizes, which were silver cups suitably engraved. The consolation prize was a huge stein, and was presented to Keyes.

Luncheon was the final meal, and, like the others, was served out of doors. After giving hearty class cheers for the Vesper Country Club and its steward, who entertained us most handsomely, the "Old Clothes Brigade" disbanded, and came back to Boston by the White Mountain express, which stopped for our convenience at the end of the bridge.

The class had a good turnout at the Brunswick spread and at the Tech night Pop Concert, where a number of new men took the places of those who were unable to remain throughout the celebration. The following is a list of men who were present at Lowell or Boston, or both: I. W. Litchfield, '85 (guest); and J. C. Abbot, Ashton, Barnes, Baxter, Bemis, Blood, S. A. Breed, Brockunier, Cadwell, E. B. Carney, W. W. Carter, Crosby, N. P. Cutler, Jr., Dawes, Densmore, F. N. Dillon, Fay, W. S. Forbes, Keith, A. L.

Kendall, Keyes, Latham, Norris, E. S. Page, W. B. Page, Phinney, Pickert, Reynolds, Sayward, C. G. Sargent, H. R. Sargent, Soley, Taintor, Tucker, Whiston, Wilson.

Commodore Henry A. Morss of the Corinthian Yacht Club, who in his schooner yacht "Dervish" won last year's ocean yacht race to Bermuda, again has the distinction of being the winner in his class in this year's Bermuda race, which was started from Marblehead Harbor on Wednesday morning, June 3. Six boats entered the race in two classes: those of Class B being the schooners "Esperanza," "Dervish," and "Zurah," with ratings of 78, 75, and 70 feet, respectively; and the smaller boats of Class C, being the "Marchioness," "Venona," and "Edith Anna," rated at 57, 55, and 46 feet. Early in the contest the smallest boat, the "Edith Anna," was disabled and forced to return to Marblehead.

The feature of this year's race was the almost continuous heavy weather, which was especially severe when the boats were nearing the islands; and, while the larger boats kept to their course, the two smaller boats made a detour to the eastward to avoid the worst of the gale. This move was a particularly fortunate one for the small boats, for all of the Class B boats were held up by the storm, and both the "Venona" and the "Marchioness" of Class C came in on Sunday afternoon and evening ahead of their larger competitors. The "Dervish" crossed the finish line at 12.40 A.M. Monday morning, beating the other boats of Class B by nearly a whole day.

1894.

Prof. S. C. PRESCOTT, *Sec.*, Mass. Inst. of Technology, Boston, Mass.

The annual dinner of the class was held at the Nottingham, Copley Square, on Monday evening, June 8. This was the first time for several years that the dinner was held on an evening other than the night of the Pop Concert. The result was a small attendance,—only eight men,—T. G. Richards, L. Tufts, M. S. Chace, R. B. Adams, W. H. Sayward, Jr., H. S. Duckworth, C. M. Lawrence, and S. C. Prescott. Although so few were present, the

dinner was a very pleasant and successful one, with many anecdotes of the old days at the Institute.

The principal topic for discussion was the celebration of the fifteenth anniversary of graduation in June, 1909. Those present at the dinner constituted themselves a central committee to consider the best method of celebration and to awaken enthusiasm among the other members of the class.

The plan most favorably received was one involving a visit to some hotel or country club, not too far from Boston, where sports of all kinds, such as golf, tennis, and baseball, can be indulged in, and a class dinner held in the evening. It was thought that such a class outing can be had at relatively small expense, and with opportunity for the fellows to get together for one or two days and renew old acquaintance, and have a general good time. The secretary will gladly receive suggestions from any member of the class as to how the ends sought may best be attained. There can be no question that we ought easily to get together from thirty to fifty men who would participate in such an outing, and it is hoped that all will approve the plan and work for its success. By beginning at once, plans can be perfected and a good time assured if the men will approve and co-operate. It cannot be expected that one man or a small committee can do the whole thing.

On Tuesday evening, June 9, at Tech night at the Pop Concert, fourteen '94 men attended; viz., Adams, Chace, Cheney, Duckworth, Ferguson, Jones, Lawrence, Lanigan, Phelan, Prescott, Richards, Sayward, Weston.

The class was the first to enter Symphony Hall, and the old '94 cheer was given for each of the first six or eight classes to follow. The plans for reunion next year were still further discussed, and all were enthusiastic in approving the general plan, and offered cordial support. The evening was a very pleasant one, and in reality served as a continuation of the meeting of the evening before as well as an event by itself.

A number of members of the class were unable to be present, and sent pleasant messages. Piper sent a telegram from a camp in Canada, where he is on a fishing trip. King sent a characteristic

cordial message, stating his intention to be on hand next year. So, also, did Locke, H. M. Chase, MacClure, S. G. Reed, Robb, and a number of others.—The class will sympathize most sincerely with Claflin in the loss of his father.—H. W. Gardner has, within the past few months, become a proud parent, John Wentworth Gardner being the name of the new arrival.—J. C. Locke also reports the advent of a young son, John. May he be as husky as "Calvin," whose prowess is a part of '94 history.—H. N. Parker was in Boston for a few days about June 1. After several years of field work at different stations, Parker is now assigned to office work in the Geological Survey in Washington. For about two years he has been engaged in a study of rivers and water supply resources in Kansas.—H. R. Batcheller drops in at the Technology Club occasionally. "Batch" is engaged in mining engineering and chemistry in Maine, and has had occasion to do a great deal of original work and investigation in determining the proper treatment of some ores of relatively rare occurrence.—The secretary recently received the latest report of the Astrophysical Observatory of the Smithsonian Institution, an imposing volume, consisting almost entirely of the reports of investigations by C. G. Abbot and F. E. Fowle, Jr., on a variety of topics.—Robb writes pleasantly of his business and private affairs, reporting the advent of a young daughter, Kathleen, on February 15, and states that he is also mayor of Amherst, N.S.—Frank Drake now has his offices in the Tacoma Building, Chicago.—S. G. Cousins is at Cacamonga, Cal.—R. H. Ober's headquarters are at 605 Colman Building, Seattle, Wash.—J. C. Kimberly is in business at Neenah, Wis.—C. H. Johnson is in government service at Egmont, Fla.—The secretary wishes to express his regret that he has been so lax in his duty in sending notes to the REVIEW. While there can be no doubt where most of the blame should lie, he would like to add that co-operation is always desirable, and that news is always welcome. Even though in close proximity to the Alumni Office at the Institute, the personal notes which are of greatest interest are frequently those which come by a letter rather than through official channels. If those who have been inclined to criticise will assist, the secretary will attempt to turn over a new leaf.

1895.

CHARLES H. PARKER, *Sec.*, 39 Boylston Street, Boston, Mass.

A meeting of the class of '95 was held June 20 at the American House, there being present Hanna, Hurd, Booth, Sias, G. F. Shepard, Moore, Carlton, Parker, E. H. Clapp, W. T. Hall, Jones, Churchill, and Barrows, with President F. A. Bourne in the chair.

The reading of the records of the previous meeting was dispensed with.

The chair appointed Messrs. Hurd and Carlton to act as nominating committee for the class officers for the coming year. The following nominations were made: for president, F. T. Miller; first vice-president, E. H. Clapp; second vice-president, H. M. Haven; secretary-treasurer, C. H. Parker.

It was voted that the secretary be instructed to cast one ballot in favor of these nominees, and this was accordingly done, and the above men chosen for the several offices for the year.

A report was received from the Huntington Hall Panel Committee by the chairman, Bourne, who told of the completion of the four panels in the Huntington Hall frieze, and that they were to be unveiled by the class of 1908 on their class day, June 8.

It was voted that the class secretary be instructed to pay an additional sum not exceeding $10 of bills in connection with the completion of the '95 panels in the Huntington Hall frieze, for which the sum of $100 was authorized by vote of the class June 5, 1906. The following resolution was then unanimously passed:—

Resolved, That the class of 1895 of the Massachusetts Institute of Technology hereby express its appreciation and thanks to the instructors and students of the Architectural Department who had to do with the execution of the four panels just completed, especially to Mr. W. Felton Brown for his able, enthusiastic, and successful direction of the students in their work on the frieze.

A committee, consisting of Messrs. Shepard, Sias, and Booth, was appointed by the chair to make arrangements for '95 at the Pops on June 9.

A report of the class constitution committee was received from Messrs. Hall and Barrows, and various articles as recommended by the committee taken up and discussed separately. It was voted to adopt the following

CONSTITUTION OF ALUMNI, CLASS 1895, M. I. T.

Article 1. *Membership.*

All students who have taken a degree with the class shall be considered as members, and all students who have appeared upon the records of the Institute as taking one or more subjects with the class shall be considered members except when electing otherwise.

Article 2. *Officers.*

The officers of the class shall consist of a president and a secretary-treasurer.

Article 3. *Duties of Officers.*

The president shall preside at all class meetings and in general perform the duties pertaining to such an office. The secretary shall keep all records and official papers of the class, and shall have charge and keep an account of all property and funds, and shall make a statement of such accounts to the class before each election of officers. He shall send notice of meetings to all members of the class at least two weeks in advance of said meeting. He shall see that the class is properly represented at all general Institute gatherings and in the Class News of THE TECHNOLOGY REVIEW, which magazine shall be the official organ of the class.

Article 4. *Elections.*

An election of officers shall be held once every three years by letter ballot. The president and secretary shall act as a nominating committee for the class officers to succeed them, preparing the letter ballots. The ballots shall be sent to all members of the class, and the polls closed the day before the annual meeting.

Article 5. *Meetings.*

Class meetings shall be held at the discretion of the secretary, and the annual meeting within seven days of graduation day at the Institute.

Article 6. Assessments.

The secretary shall levy assessments upon the members of the class to provide class funds.

Article 7. Amendments to Constitution.

The constitution may be amended by two-thirds vote of members replying to a notice sent to all members of the class one month in advance.

A report was called for from the trophy committee appointed Feb. 4, 1908. No members of this being present, the committee was continued.

The meeting then adjourned.

The following men were present at the Alumni Association and class spreads at the Brunswick and also at the "Pop" Concert afterwards: F. A. Bourne, Barrows, Cutter, Dean, Defren, Eveleth, W. T. Hall, Loring, Newell, C. H. Parker, Rockwell, G. F. Shepard, Sias, Tillinghast.

After marching in with the class banner, one, Sias, opened a few bundles, and proceeded to get into operating condition on an electrical "klaxon," or motor-driven automobile horn. With this to lead the cheering, I am sure it was evident to every one that '95 was present and in good form.

During the first intermission some thousands of slips were thrown from the second balcony by eight of the class stationed there. These slips read:—

'95

13TH GREETING

Here is to your good health and your families,
May they all live long and prosper.

Joe Jefferson.

Those present had a good time, and only regretted that we did not have more of the class present.

The class secretary wants to say to all members of the class of '95 living at a distance from Boston that, if they will mail him a postal

when they travel this way, he will be happy to do what he can to make their stay here pleasant by arranging meetings with classmates, etc.

1898.

PROF. C.-E. A. WINSLOW, *Sec.*, 157 Walnut Street, Brookline, Mass.

The decennial celebration of the class of '98 began with a dinner in the Dutch Room of the Copley Square Hotel on Monday, June 8, at 6.30 P.M. A copy of the Decennial Class Book was at the place of each member. After a photograph had been taken of the entire aggregation, the provender was attacked, its destruction being accompanied by much cheering and singing (?). A visit from 1904, signalized by the presentation of a box of cigars, made the occasion particularly memorable. After the repast, Winslow made a few husky remarks, and introduced Godfrey as toastmaster. Major Bigelow, the honorary member of the class, gave the least informal speech of the evening, dwelling on the glories of war and mighty armaments. Godfrey then called on each man present for a 10-minute address, enforcing the expiration of the time by the vigorous use of a gavel in the shape of a '98 class cane (L. D. Gardner, chairman). If it cannot be said that all the speeches were eloquent, it is certain that all were frantically applauded. Gardner's memory book was meantime passed about, and recalled many fond recollections of the cane rushes, the election nights, and the other joys of happy boyhood. The following were the genial rioters who took part: Major Bigelow, Allyn, M. V. Ayres, E. R. Barker, Bennink, Blanchard, Bragg, Brewster, Butcher, Chapin, Coburn, Coombs, Cottle, Curtis, Daly, A. L. Davis, Davison, Dawes, Delano, Dodd, Edgerley, Gardner, Goddard, Godfrey, Goodrich, Howard, Humphrey, Hurter, P. F. Johnson, Lansingh, C. E. Lord, Marshall, Nelson, Pease, Perley, Perry, Porter, Richmond, Riley, Roberts, W. A. Robinson, Russ, Seidensticker, H. T. Smith, Stillings, Tew, Treat, A. H. Tucker, Wadsworth, C. F. Wing, Winslow, and Wright.

Tuesday, June 9, bright and early, the gang proceeded to Winchester, and took possession of the Winchester Country Club. Butcher and Richmond and others got very warm on the tennis courts. Wright learned to play golf, Chapin and many more tried to play golf, and it is said that Godfrey, Tew, and Lansingh really did play. The total number of lost balls was 2,831. A chicken luncheon was served with great éclat, and soda-water bottles popped joyously. Another photograph was taken by Barker, aided by Andrew Carnegie and three caddies. Treat and a sedate party played bridge. At 4.35 P.M. the assembly (minus the Aristocrats, who had left earlier by motor, and the golf fiends, who remained to lose their remaining balls) proceeded to Boston by special car. Besides most of those who had been at the dinner, Butterworth, Cornell, Dana, and C. F. Smith were included in the Winchester party. The special was decorated with cardinal and gray, and sounds of revelry were heard to proceed from it, particularly in the neighborhood of Harvard Square. On the trip, prizes for the day were awarded as follows: first prize, for the biggest bluffer, W. Brewster, a medicine ball; second prize, for the hardest knocker, G. W. Treat, a baseball bat (nearly new); booby prize, to F. B. Perry, a golf ball.

Our arrival at the Brunswick was apparent to all. Once there, we maintained a spirit of cordial good fellowship with almost all the other classes by marching through their domains in lock step, and by cheering them collectively and individually. We enjoyed our own punch bowl and that assigned to '97. We paid a visit to Rogers steps, where we were joined by the glorious youngsters of 1908. At the Pops we displayed our banner far above any other class, and presented the conductor with our usual token of appreciation. *Sic transit Gloria Decennii.*—A. W. Tucker couldn't come to the reunion. He was married on June 3, in Boston, to Miss Amy Susan Bradford, daughter of Mrs. George Sanford Bradford.—Putnam wasn't there, either. He was married on June 10 at the First Baptist Church, Fall River, to Miss Helen Preston Haughwout, daughter of Mr. and Mrs. Velona Winant Haughwout.—The following extract from the '98 Decennial Book may have some interest outside the class:—

CLASS STATISTICS

Statistics in regard to salary were furnished by 185 men, about half the class. The aggregate amount of money paid annually to these 185 men is $558,260, an average of $3,018 per man. The median salary is about $2,200, and the distribution of salaries by groups is as indicated below:—

Salary.	*Number of Men*
$500– $999	2
1,000– 1,499	19
1,500– 1,999	44
2,000– 2,499	41
2,500– 2,999	12
3,000– 3,499	22
3,500– 3,999	7
4,000– 4,499	14
4,500– 4,999	6
5,000– 5,499	4
5,500– 5,999	1
6,000– 6,499	2
6,500– 6,999	1
7,000– 7,499	0
7,500– 7,999	2
8,000– 8,499	1
10,000 and over	7
	185

The average salary, $3,018, is good, and compares well with $1,989, which was the average figure four years ago. A very notable fact is the large number of high-salaried men. Of the 185 reporting, 38, or 21 per cent., are earning $4,000 or over; 7 men, or between 3 and 4 per cent., are earning $10,000 or over. The extreme salaries reported are $15,000 and $25,000. These facts show the fallacy of the view sometimes advanced that technological institutions do not train men for the higher administrative positions.

The breadth and cultural value of Technology training is also well illustrated in the comments of some of the men who have followed non-professional lines. Thus Lambert, M.D., says: "After nearly nine years of the application of science in the art of healing, I still feel that perhaps the most valuable part of my training came from the Institute." Harris, who is stock-raising, says: "Even though he does not follow his profession, the habits of thought and the methods of work and the self-reliance gained in any course at Tech will be of great value to the student in after-life, whether he manufactures ice, builds houses, or runs a farm." Gardner,

who is advertising manager for *Collier's*, writes that "the work that I did with Dr. Dewey in Course IX. helps me every day of my business life. It is, to my mind, after ten years of business experience, the best training a business man could secure in any academic institution."

Of 170 men who report as to their conjugal condition, 143 are married, and these 143 report 155 children,—78 girls and 75 boys. Four years ago only 54 offspring were recorded.

1899.

HERVEY J. SKINNER, *Sec.*, 93 Broad Street, Boston, Mass.

A good number turned out at the alumni spread and concert on June 9, 1908. Those present were W. O. Adams, K. M. Blake, E. H. Hammond, J. L. Hern, H. G. Johnson, W. A. Kingman, T. F. Lennan, R. W. Loud, H. S. Mork, T. C. O'Hearn, G. H. Perkins, B. R. Rickards, E. R. Sheak, H. J. Skinner, J. L. Tufts, W. C. Whitney.—The class dinner was omitted this year in order not to detract from the plans of the association which were tried this year as an experiment. A class dinner will be held in the early part of the winter, and plans made for next year's celebration, which will be our tenth anniversary and which comes at the same time as the second big alumni celebration.—Lennan was in Boston during June. He is engaged in mining in Webb City, Mo.—Winslow has recently taken a position as superintendent with Hinman & Sproul, contractors. They are engaged in highway and sewage disposal work in New York state.—Corse was elected president of the Detroit Foundrymen's Association, a newly formed organization. In June he attended the American Brass Founders' Association Convention at Toronto, of which he is a vice-president. The following changes of address have been received: J. B. Ferguson, Ohio Electric Railway Company, Lima, Ohio; E. T. Hildreth, Box 586, Coeur d'Alène, Idaho.; Henry P. James, 930 New Onon Bank Building, Syracuse, N.Y.; Edward Johnson, 670 Pacific Electric Building, Los Angeles, Cal.; Carl S. Milliken, Gould Cottage No. 3, Tucson, Ariz.; W. Scott Matheson, 526 Broadway, N., Seattle, Wash.; F. A. Watkins, 407 Laurel Avenue, Highland Park, Ill.

1900.

H. E. Osgood, *Sec.*, Room F, Chamber of Commerce Bldg., Boston.

Nineteen Hundred was well represented at the Brunswick spread and the Pop Concert the evening of June 9. The idea of the various classes having rooms set apart for headquarters or assembly rooms is a good proposition, as the members of each class were immediately in touch with classmates. It likewise permitted of visiting and locating members of the other classes. The general spread was not, however, so successful, as the stand-up luncheon, with a great many to be fed and all desirous of eating at the same time, developed some confusion and crowding.

There were present, as noted by the secretary, L. B. Jennings, Dick Wastcoat, Learnard, A. C. Walworth, Jr., Percy Ziegler, Walter Kattelle, Herbert Howe, Lewis Emery, "Bill" Everett, Stanley G. H. Fitch, Graff, Elbert Allen, and Paul R. Brooks. A good time was enjoyed at the "Pops." The classes generally formed in line and marched out Huntington Avenue to Symphony Hall. The balconies were well filled with admiring friends and pretty faces, and formed a brilliant and happy setting for the assembled Tech men on the floor. The evening passed with music and song, interspersed with class yells. The usual enthusiasm and confetti were in evidence, and all went home feeling that the 1908 reunion was worth while.

The class voted not to combine the regular ten-year reunion with the Grand Tech Reunion of next year. The same officers as served last year were elected for the ensuing year. It was decided to hold an outing at Nantasket Beach, June 20, 1908. Leave Boston on the 3.20 boat, Rowe's Wharf, arriving at Pemberton for dinner at 5 P.M., thence by trolley to Nantasket Beach and Paragon Park for the evening. An enjoyable time is anticipated.

The secretary has received the announcement of the wedding of J. P. Draper to Mary Glen Fling at Philadelphia. The class extends its best wishes to the happy couple, and it is to be hoped that a bigger, better, and busier Draper will, at some future date, be

prominent in the affairs of the Institute.—A letter from Paul Price has been received. He is with the American Bridge Company, New York office.—Several changes in address have been received and noted, and it will be a pleasure to furnish any address desired by members of the class.—Paul Brooks and S. G. H. Fitch are associated together in a business enterprise at Peabody, Mass. The Machine Sales Company is fortunate in having Paul Brooks as general manager and S. G. H. Fitch as assistant treasurer. We wish them success.—A letter from Herbert Keay, of the Department of Railways, McGill University, Montreal, was received by the secretary some time ago. As several members of the class are mentioned, it will undoubtedly prove interesting. It reads as follows:—

One evening last July I was most royally entertained at Gerald Frink's beautiful home on the Lake Washington side of Seattle, on which occasion we "swapped" Tech news and lived over some of our experiences in Bean Town, pleasant and otherwise. Gerald, as superintendent of the Washington Iron Works, has certainly made good, and I may add that his young son Jimmie is a very promising candidate for the class of 1925 M. I. T.

The other members of the "Seattle bunch" have followed various paths, but all have given good accounts of themselves as Tech men.

Al Schmidt is doing very well in the hoisting machinery business in Chicago. I didn't see Leonard to verify or disprove his declaration that he is becoming hairless and fat. Bill Hough and Angus also narrowly escaped a call from me.

At Steelton, Pa., I was denied the pleasure of gazing once more on Steve Badlam's genial and bewhiskered countenance, from the fact that his duties as assistant superintendent of the Merchant Mill of the P. S. Company made serious inroads upon his erstwhile observance of the Sabbath Day, and that was all the time I had.

While I met a large number of Tech men in various parts of the continent last summer, only a very few were of our class.

As for myself, I am still holding down an Assistant Professorship in Mechanical Engineering here at McGill University, with some fairly definite and satisfactory prospects in view along the lines of railway work.

[illegible]

[illegible] Williams, '01 [illegible] Hall, Cambridge Hill, Mass.

The class was present at the class supper at the Brunswick, Tuesday, June 5, and took possession of their "Hut," where we passed a few good days and nights. Before leaving the Brunswick, a vote of thanks was tendered the following officers, elected for the coming year: President, F. V. Thayer; Vice-President, F. V. Hartman; Secretary-Treasurer, F. L. Williams; Executive Committee, A. T. Brigham and V. L. Hopewell; Assistant Secretary-Treasurer, F. L. Dodge. Nearly all of the evening dress and mess-suits were worn at the Technique Club. Mr. Charles F. Bunker, of the Cambridge Evening Tribune, gave an extremely interesting talk on the sweet tobacco. The talk was illustrated with screen views. The following received some very valuable information and had a pleasant time. Eleven men were present.—The marriage of Miss Lillian Rose Jacobs, elder daughter of Mr. and Mrs. Joseph E. Jacobs, of Vine Street, and Howard Thurman Chandler, of Boston, took place Tuesday, June 5, at the home of the bride's parents. Many fine relatives and friends were present. Immediately after the ceremony Mr. and Mrs. Chandler set for a tour through the West, where they will visit relatives and friends in Kansas City, Los Angeles, San Francisco, Salt Lake, Denver, Omaha, Chicago, and many other points of interest. Mr. Chandler is associated with the Walter Baker Company, Limited.—James Bradford Laws was married June 5 to Miss Margaret Elizabeth [illegible], N. Y., at Miss Margaret Elizabeth [illegible] home, 3203 Reading Road, Cincinnati, Ohio. Harry Wesley Chambers was married June 2 to Miss Josephine Louise Goodrich, at Queens, L.I., N.Y.—Word has been received from W. S. Pepperell of his engagement to Miss Caroline Mason Rivers. Harry W. Chambers is now assistant engineer, Improvement Construction Forces, New York Central & Hudson River Railroad. He has spent a year since graduation

travelling in Italy, Tunis, Algiers, Turkey, France, and England.—John R. Brownell is assistant engineer for the Pennsylvania Steel Company. He has three children.—Salvador Madero is married, and manages three rubber factories in Coah, Mex.—LeRoy M. Backus writes he is vice-president of the Northwestern Contract Company, treasurer Washington Lumber and Timber Company, president Wapato Irrigation Company, cashier Washington Bank of Seattle, and director of the National Bank of Commerce. Judging from his numerous offices, he must be a very busy man. He was formerly president of the Alaska Coast Company, operating steamers in the Alaska service. In this connection he made an extended tour of the southern coast of Alaska as far as Cook's Inlet and Kodiac during the summer of 1907.—F. S. Clapp, in an interesting letter, writes that during the past winter he has been working for Uncle Sam on a geological survey of Florida, with the object of preparing reports on the geology and artesian waters of that State. "For a geologist," he says, "there are hundreds of miles to travel on 'express trains' which run, Dixie fashion, on an average of fifteen to twenty miles an hour, there are towns fifty miles or more from the nearest railroad that must be reached in a single day by continuous driving with a team of mules through deep sand. When the floods come, as they have frequently in West Florida during the past few months, there are rivers to ford with the water above the buggy seat, or with the alternative of driving twenty miles to a town on the same side of the stream." At present he is located in Washington for a year to get the data of his trip in shape for publication.—The following changes in address have been received: L. R. Henrich, 220 Devonshire Street, Boston, Mass.; P. F. Goodwin, 35 Saunders Street, Allston, Mass.; P. L. Buxton, 13 Southgate Street, Worcester, Mass.; H. A. Putnam, J. A. Roebling's Sons Company, Trenton, N.J.; S. A. Clark, Fort Niagara, N.Y.; A. P. Trufant, 16 Linden Street, Whitman, Mass.; P. A. Potter, 260 W. 72d Street, New York.; E. B. Cook, 718 King Street, Pottstown, Pa.; E. P. Burdick, 1011 Hibernia Bank Building, New Orleans, La.

1902.

F. H. HUNTER, *Sec.*, 75 Park Street, West Roxbury, Mass.

The sixth annual meeting and dinner of the class was held at the Copley Square Hotel on the evening of June 8. Dean Burton was the guest of the evening, and gave a splendid talk on the development of student initiative at the Institute. At the business session a provision for life membership was voted, and the board of officers was unanimously re-elected to serve another year. During the evening, visits were exchanged with the class of,'98, and the new "coyote yell" was tried out upon them with satisfactory results. Letters from a number of fellows in distant parts of the country, called out by the recent class record, were read.

On Tuesday several men put in the day at the Highland Club. Bowling, tennis, and pool were in order. The spectacular manner in which the "Heavy-weight Team," led by Chalifoux, always managed to lose on the alleys was the feature of the day.

At the Brunswick, where all classes united in a supper and each maintained a punch bowl, Naughty-two was in the limelight. An invitation to all hands to "Come in and have ONE" from our bowl was hung without our door, and they *came*. With twenty-five men on hand, '02 had the largest delegation between '98 and '06.

At the Pops the class was on deck, doing creditable work in singing and shouting. The confetti thrown from the balconies—a Naughty-two scheme, by the way—showered on all alike, but much of it found a distinguished resting-place on the head of Chalifoux, the genial. The men attending some or all the functions were: Ames, Boardman, Chalifoux, Collier, Daly, Fitch, Fletcher, Gardner, Greeley, Hall, Hooker, Hunter, Magrane, Millar, Mitchell, Jason Mixter, Moore, Nickerson, Sawyer, Starr, Stillings, Thurston, Wemyss, Westcott, Wetherbee, Whittet, and Irving Williams.

Since the issue of the Class Record the following notes have been received by the secretary. W. V. Morse was married in November of last year to Miss Edna A. MacRoberts. His location as given in the record book is correct.—Rayne Adams was married on the

1st of last May to Miss Janet Rimsa, of New York City.—Shedd is with J. R. Worcester & Co., structural engineers, 79 Milk Street, Boston.—Bartlett has returned from Europe, and is now located with Allen & Collins, architects, Boston. His home address is 63 Fenwood Street, Roxbury, Mass.—His travelling companion, James McF. Baker, who returned to this country earlier, is with Cram, Goodhue & Ferguson, of 170 Fifth Avenue, New York, the architects of the new West Point Buildings.—Arthur More and his wife have returned from an extended wedding trip, on which they visited not only Western Europe, but Turkey, Greece, Asia Minor, Syria, Palestine, and Egypt. More is again "maintaining the way" for the C., C., C. & St. L. at Wabash, Ind.

1903.

F. A. Olmsted, *Sec.*, 93 Broad Street, Boston.

An informal dinner of the class was held Friday evening, April 25, at the American House. Aldrich, Atwood, Bartlett, Clark, Gleason, King, Newman, Olmsted, and Swett were present. The annual dinner of the class was held at Hotel Bellevue, Saturday evening, June 6. Aldrich, Atwood, Clark, Gleason, Gould, Haddock, King, Loughlin, Merrill, Newman, Olmsted, Ricker, Swett, and Tolman were the faithful men present. Greetings were read from Cheney, Cox, Eaton, Hunter, Joyce, and Nibecker. Loughlin and King, with the assistance of a piano, which only had a few notes which would not sound, furnished music, which added much to the pleasure of the evening. Those who could not be present missed a good time. Seventeen men from the class were present at the spread of the class at the Brunswick, Tuesday, June 9. At the "Pops" five other men joined them, and the class did its full share in the celebration. Sashes, on which were stamped the class numerals, were worn by the men; and a large banner was hung on the balcony over the tables occupied by the class. Confetti, bearing the class numerals, were showered from all parts of the hall simultaneously, and fans bearing the numerals were very popular among the ladies. Every mem-

ber present considered the event a great success, as far as our class was concerned.—Bateman writes that he was presented with a son, William McCullough, April 20.—Morse has left the United States Reclamation Service, and is now with the Commissioner of Sewerage at Louisville, Ky. His address is 602 Edgewater Building, Louisville.—The following are other changes of address that have been noted: Ancona can be reached at 3 Emerson Street, Rochester, N.Y.; Chase is at the New York Central Office, Weehawken, N.J.; Colgan is with the Western Electric Company in New York; McIntosh, 176 Prospect Avenue, Milwaukee, Wis.; Fogg, State College, Pa.; Low is with C. H. Huff at 60 India Street, Boston; Moies, 161 Main Street, Pawtucket, R.I.; Winchester, 1210 Penobscot Building, Detroit, Mich.; Craven is a civil engineer in Ogden, Utah; Asbury is at 302 N. College Street, Charlotte, N.C.—Bradshaw writes that he has been in Mexico for eight months. He returned the last of April, spending a week in Mexico City and two days in Havana, also a week at an hacienda in the State of Zacatecas. He is now at 688 Nostrand Avenue, Brooklyn, N.Y.—At least two of the members of the class would like to obtain copies of our Senior Portfolio. If any member knows of one which is available or has one he is willing to dispose of, please inform the secretary to that effect.

1904.

R. A. WENTWORTH, *Sec.*, Saylesville, R.I.

M. L. EMERSON, *Res. Sec.*, 161 Devonshire Street, Boston, Mass.

Under the management of Tammie Rockwood and Dick Hartshorne we had a dinner at the Technology Club on May 1 which was a great success. Between twenty-five and thirty men were present, and the affair could not have been more enthusiastic. Dean Burton gave a rattling good talk on the reforms which President Noyes is carrying out and their relation to the different undergraduate activities. H. W. Hoole ('08) spoke on undergraduate affairs from the student's standpoint. Harry Stevens summed up the evening's

speeches thus: "The undergraduates at the present time seem to have the Faculty on the run." This year's Commencement arrangements were discussed. It was decided to have an outing down the harbor some Saturday afternoon this summer, accompanied by baseball, etc. Galusha, who is chairman of the committee for our Five-year Reunion next year, got after the fellows on that subject, and aroused considerable interest.—On June 8, we had our Fourth Annual Reunion at Bova's Café, Boston, in company with '05. Altogether there were thirty-eight men on hand, about equally divided between the two classes, so that the showing was equally discreditable. We had a very good dinner and a very good time. There was no talk except that which the secretary evolved at a brief business meeting before the dinner. We were entertained by vocalists of the café staff, assisted and encouraged by the crowd. Butts ('05) did some solo dancing which revived memories of old Tech Show rehearsals. His costume was of restaurant linen, cut *à la* table-cloth.—On June 9, '04 spread with '05 and '06 at the Brunswick, and assisted slightly at the "Pops." Twenty men were out, four of whom stuck to the gallery.—Letters asking men to serve with Galusha on our committee for the big reunion have brought out enthusiastic replies. If the men live up to their letters, we shall have a reunion which it will pay YOU to attend.—Trowbridge writes on the business stationery of "Barbour & Trowbridge, Insurance and Real Estate, West Newton, Mass." He says that real estate business is good, and somewhat easier than selling mines, which he was doing in Mexico for a couple of years.—Bouscaren writes from Stone & Webster's office in Tampa, Fla., where he has been for some time. His reason for not coming up to our dinner in March was, "Ain't got the sixty cents."—Sweetser is still with Stone & Webster, and is now back in Boston, though the Register of Graduates puts him in Kentucky.—Galusha has gone to Europe for a trip of several months.—Pete Underhill writes from Crockett, Cal.: "I have no news except that I am still unmarried, heart-whole, and care-free. Am slowly becoming a native son of the Golden West, and my water tubes are getting coated with scale from drinking hard water. I am still a total abstainer, although there are twenty-

two saloons on the main street, which is not over two hundred yards long. Have met quite a number of Tech men in 'Frisco, including Tommy Atkins and Nickerson of '04, and expect to see them again on May 2 at the annual dinner of the Technology Club of Northern California, the latest alumni organization."—A letter of mine addressed to Selskar Gunn in Boston is answered from Orange, N.J., thus: "Your address book is away behind the times. I left Boston in June, 1906, and was out in Iowa until the end of last month, when I accepted the position of health officer to the city of Orange, where I am now located."—A letter to Paul Paine found him still in the Government Forest Service at Burke, Ida., whence this: "I am at present up in the wilds of Northern Idaho, and do not expect to return to Washington till October. I intend to be at the reunion if I have to walk to it."—Willard was in Boston for some days at Commencement time, having come up from Washington ahead of time to "see that Pirie and Kramer got properly started on their matrimonial careers." He and Mrs. Willard are planning a good vacation in Maine.—Fairfield and Dow are in business together on contracting work at Mineola, Long Island, N.Y.—Goldthwait is on the business end of some summer camps in the South.—Stetson writes from Pittsburg, bemoaning the scattering of the big bunch of '04 men whose first flight landed them in that city.—Mert Emerson is the alumni member of the recently formed Advisory Committee on the Tech Show.—It is reported that S. A. McClung, Jr., is doing finely at law in Pittsburg. I think that he is with the firm of Chantler, McGill & McClung in the Park Building.—Had a good letter from George Powell awhile ago. He said in part: "I wish I could tell you of some of the fellows, but there are none around here since Harry Noyes left about a year or so ago. He promised to write me, but never did so. Tammie Rockwood came in to see me one day last winter, and it was good to see him again. Personally, I have little or no news. Being neither engaged nor married, I'm sort of out of the swim with the rest of the class. Still, I'm enjoying life and doing fairly well."—Holcombe writes from Washington: "Charley Haynes and his younger brother were down here the week after Easter, and livened things up for a spell,—put a spell

on the jolliest girl in the bunch, too, our prize exhibit,—but aside from this outburst our serenity, or lethargy, has been undisturbed. I will take that back. I was called out about midnight one Sunday by the cries of 'Extra!' reverberating through the streets, and, to quiet the fears of the white-robed women huddled in one room, sallied bravely forth to find out who had shot the President; and what do you think? The long defunct Chelsea was the cause. That shows how totally stagnant we are when we have to depend on Chelsea for our thrills. A couple of weeks more, and we shall be having our final exams. at George Washington University Law, and yours truly will be able to relieve his overburdened mind and plan how he shall spend his month's leave." He mentions the lack of spirit among Tech men in Washington, but our own recent showing has been so rotten that I don't dare to quote his letter.—Tommy Atkins is coming home from San Francisco on a visit in August, and is going to try his best to get to Boston in June, 1909.—Cap Curtis is at Palmer, Mass., for the summer, looking after five State highway contracts.—Boggs writes from Chrome, N.J.: "I work mostly at night, from six in the evening until seven in the morning, and consequently have little time for outside work."—J. F. Blackie is with the Milwaukee Coke & Gas Company, Milwaukee, Wis.—A. D. Smith is doing private chemical and engineering work as a specialist on petroleum refining in addition to his duties as superintendent of the Coraopolis (Pa.) works of the Canfield Oil Company.—From G. M. Homans: "Have just returned from an administrative trip through South Dakota, Montana, Idaho, Washington, Utah, and Colorado. Had some fine snowshoe trips, especially the one from Montana across northern Idaho, following approximately the route of the old historical Indian trail known as the Lalo trail. Object was inspection of the right of way of the Chicago, Milwaukee & St. Paul R.R., which is now in the final stage of completion."—Under heading of "Cessna & Goddard, Reinforced Concrete, Engineers and Contractors, 178 Devonshire Street, Boston," Goddard writes: "A line to let you know that I have severed my connection as engineer, general superintendent of construction, for the Boston branch of the Concrete Steel

& Tile Construction Company, and am now engaged in an engineering and contracting business with F. W. Cessna, formerly chief engineer of the Boston office of the Trussed Concrete Steel Company. Mr. Cessna is an Iowa College man. We have been in business since the first of the year, and are doing first-rate."—F. W. Farrell has returned to the Emerson Laboratory, Springfield, Mass.—A letter to Rupf brought out the following: "Now for news. The latest I have to offer is that of the wedding of Harry Rowe to Miss Madeleine Alden Kingman at Yonkers, on the 8th of April. The wedding was a brilliant affair. George Magee, also of Course IV., was best man. As you perhaps know, they are in business together in Boston. I am in communication off and on with Rowland Rice. He is superintending a job up in Pomfret, Conn., for Ernest Flagg, the well-known architect of the Singer Building in New York. According to latest reports, the country air is so agreeing with him that he is beginning to strongly resemble our possible next President. I came here (Port Chester, N.Y.) with the Russell, Burdsall & Ward Bolt and Nut Company about a month after graduation. I am endeavoring to live up to the title of constructing engineer for the firm. We have a good-sized plant, keeping about 1,200 men busy, so you can see that I have very little idle time on my hands, and hustle from seven to six. Port Chester is a town of about 12,000, right on good old Long Island Sound, and in summer we just about live on the water. Then we are only twenty-five miles from New York, so we go in town often, shopping and dissipating."—Frank Davis came up nobly with: "I was over in Louisiana when one of your circular letters reached me, but am not now, much to my satisfaction. Christmas found me in Chicago, and New Year's on a train bound for Texas. I had letters from several railroad men in the North to railroad men down here, and, although I had intended to take a trip around and see the country, I changed my mind at the right time, and went to work for the Atlantic Lines Southern Pacific Company. I woke up on the Louisiana end the next morning in Lafayette, where I stayed until the middle of March as general foreman on the construction of the Baton Rouge-Lafayette line. I took in the Mardi Gras at New Orleans, and know

enough now to stay away from such things hereafter. I had dinner in Fort Worth with George Holbrook, '00, who is superintendent of Armour's lard refinery, and in Dallas I found L. A. Russell (VI., '04), who is treasurer of the Russell Realty Company. I took lunch with W. P. Bentley (VI., '04) in Dallas about the tenth of January last. Bentley is a superintendent of construction on the Dallas Street Railway, for Stone & Webster. I understand that there are Tech men here in Houston, but have not seen them. I took a fall out of Galveston the other day. Galveston is the first place in Texas of any size that did not seem attractive to me. You see that the grade-raising there is still going on, and a good share of the town is a sand beach. Everything there is interesting, though, dredges, sea-wall, etc. Till now there has been but one way to get into Galveston, and that over the Santa Fé's bridge. Five different railroads use this bridge, which the Santa Fé built just after the storm. I understand that Stone & Webster are going to build an interurban from here to Galveston just as soon as the causeway is built, and that is coming soon now. I have not found railroading here just exactly the same as it is north around Chicago, but I was surprised, after hearing such bad reports of Texas railroads, to find that there are some really good roads in Texas, in spite of all the railroad legislation and Railroad Commission. The Santa Fé has a rather fair track most of the way from Kansas City, the best part of it in Texas. The Southern Pacific lines are the best without doubt. They have pretty fair track, but I have yet to see the class of track that there is between old "Chi" and Milwaukee. I have been very well pleased with the men that I have met here, and that goes a long way. Altogether, I enjoy Texas well enough to stay awhile at least, and, when I do leave here, I am going to California and Oregon."—New addresses are C. R. Montsarrat, Mount Air, Powell, Ohio.—H. H. Gould, 24 Underhill Street, Winthrop, Mass. —Charles H. Stebbins, 76 Meridian Street, Melrose, Mass.—Ernest L. Clifford, 1203 Michigan Avenue, Evanston, Ill.—Jules E. White, 155 Remsen Street, Brooklyn, N.Y.

1906.

GEORGE F. HOBSON, *Acting Sec.*, 164 Holyrood Avenue, Lowell, Mass.

I. *On the Part of the Secretary.*

As per above heading, it will be seen that Mr. Angelo T. Heywood has given up his position with the Institute. He is going into mining operations out in the northern part of Idaho. The class will feel his loss very keenly, for he has done a great deal of laborious, hard work for the class, and the results that he has accomplished are shown by the manner in which the fellows are keeping up their class associations.

In accordance with the constitution a committee on general arrangements for the annual class dinner and commencement celebration was appointed by the Central Branch in May, as follows: George F. Hobson (I.), chairman; C. Lyman Anson (XIII.), Frank A. Benham (I.), Ralph R. Patch (I.), Charles H. Shapleigh (I.), and Herbert S. Whiting (VI.). This committee has been busy perfecting our June program reported below.

In accordance with the constitution the Executive Council appointed the following nominating committee to name candidates for the annual election of officers: George F. Hobson, Frank A. Benham, and Ralph Scudder Clark. The names reported by the committee were the only nominations received by the secretary, and were sent to the class in ballot form, as follows:—

For one member of Permanent Fund:—

C. L. Anson (XIII.), of Boston.
Floid M. Fuller (II.–VI.), of Boston.

Director of Executive Council:—

Charles H. Shapleigh (I.), of Boston.
Herbert S. Whiting (VI.), of Roxbury.

The Executive Council has received the resignation of Angelo T. Heywood as class secretary, to take effect June 9, 1908, and, in accordance with the constitution, the Council has appointed

George F. Hobson (I.) acting secretary, to complete the term of office, which expires June 1, 1909.

SECOND ANNUAL DINNER, MEETING, AND COMMENCEMENT CELEBRATION OF THE CLASS OF 1906

On June 3 the annual dinner of the class was held at the Technology Club. Ralph Patch acted as toastmaster, and about thirty loyal men were present. A very fine dinner was served by the excellent steward of the club, and ample justice was done it. Mr. Isaac W. Litchfield, '85, was the speaker of the evening, and gave a very forceful talk on Institute matters in general and our relations to them in particular. Afterwards each man gave a résumé of his work since leaving the Institute. One man (I shall not divulge his name) claimed that he had been in "bath" six weeks, but, noticing a look of scepticism on our faces, he hastened to add that he worked for the Bath Iron Works.

It was voted that the Executive Council be instructed to determine who is the class baby (*i.e.*, the first baby born to a classmate married after the class graduated), and to honor this baby with a suitable gift from the class.

The secretary announced the appointment of the committee on ballots for the June election of class officers, as follows: James H. Polhemus, chairman; Stewart C. Coey, Carleton M. Emerson. Maxwell A. Coe was appointed the class marshal for Tech Night at the "Pops."

The fellows then adjourned to the music-room, and had an informal "get-together" for the rest of the evening.

June 9, 1908, brought with it the glorious Tech "Pops." Between 5.30 and 7.30 P.M. the clans gathered at the Hotel Brunswick. A light spread was served to all in the East Room, and '06 with '05 and '04 had three punch-bowls in service in one of the side rooms. Led by Max Coe, our marshal, at 7.30 the class marched in column of fours (and fives) up to Symphony Hall. In spots, however, it looked as if the fellows had forgotten their cadet training somewhat. At 8 o'clock everybody was there, and the air

became filled with Tech cheers, indiscriminate noise, and confetti. However, according to the prearranged programme, whenever the orchestra played, the classes became quiet and enjoyed the music. The singing was very much better this year, and the gallery could much better appreciate the beauty of our Tech songs. Thus the evening passed; and, when it was over, everybody felt that the new arrangement was a big improvement over the "rough house" of other days.

At least fifty-seven of our classmates were present at the "Pops," as follows: Barber, Sheldon, Jansson, P. K. Griffin, Ginsburg, Wood, Wolfe, Santry, Terry, Fallon, Polhemus, Mathesius, Wight, Hobson, Coe, Breitzke, Ralph Jackson, Messenger, Keleher, Whiting, Kidder, Clarke, Emerson, Kasson, Chadbourne, Johnson, C. A. Merriam, McGinnis, Kendall, Hill, Anson, Dissel, A. B. Sherman, Jr., Clifford, Fisher, Bent, Walsh, Patch, Heywood, Lawton, Cranston, Gaylord, Dixon, Rowe, Norton, Evans, Coey, Shapleigh, Sargent, Fuller, Harry Brown, Mowry (VI.), Reed (III.), Dan Adams, Kidder (VI.), and others, and in the balcony Miss Cederholm, Miss Ruggles, and a large number of '06 guests.

At the spread James H. Polhemus reported the results of the second annual election of class officers, as follows:—

Trustee for Permanent Fund: C. Lyman Anson, of Boston (re-elected). Term expires June 1, 1911.

Director of Executive Council: Charles H. Shapleigh, of Boston. Term expires June 1, 1911.

The secretary announced as follows regarding the appointment of (1) representatives of the geographical branches of the class and (2) Boston representative of each course:—

(1) In May the following letter was sent out to over one hundred fellows in the vicinity of New York City, Philadelphia, Pittsburg, Washington, D.C., Chicago, and California:—

Dear Sir,—I beg to call your attention to the enclosed '06 Class Constitution, which provides that the groups of fellows in principal centres shall be officially represented in the class organizations. The establishment

of representative correspondence for the unorganized groups, small or large, shall be arranged for by the class secretary.

Since no formal '06 branch has, to the knowledge of the class officers, been organized for ..... and vicinity, I am writing to ask if you will assist me by suggesting the name of some classmate in that locality who would be a good correspondent to keep the fellows together there and help make sure that things are kept moving for Naughty-six.

Duplicate card catalogue files of addresses of all '06 men are being prepared from our class stencils, and will be sent to each correspondent. All corrections or changes of address are to be forwarded to the class secretary, or the Alumni Office, 37 Rogers Building, M. I. T., where they will be entered in the files. Duplicates of these changes will be sent weekly to each of our correspondents, who will thus always be furnished with a complete up-to-date catalogue of all his classmates. It is expected that this will be of much value to the correspondent.

I am writing to several of the fellows of the different courses in the various localities in order to get an approximately representative choice.

Will you be good enough to reply at your earliest convenience, in order that the appointment of the correspondent may be announced at the class dinner?

Thanking you in advance, I am,

Yours very truly,

ANGELO T. HEYWOOD, *Secretary.*

A large number of helpful and favorable replies came in very promptly from all over the country, and, after these were carefully considered, the names most commonly suggested were appointed, according to the constitution, to serve as "Corresponding Representatives of Class Branches," as follows:—

New York Branch of 1906. Charles A. Howard (II.), New York Edison Company, 55 Duane Street, New York, N.Y.

Philadelphia Branch of 1906. Percy E. Tillson (VI.), 3411 Walnut Street, Philadelphia, Pa.

Pittsburg Branch of 1906. Rutherfurd Bingham (VI.), Crucible Steel Company, Frick Building, Pittsburg, Pa.

Washington Branch of 1906. Herbert A. Terrell (II.), Supervising Architect's Office, United States Treasury Department, Washington, D.C.

Chicago Branch of 1906. Edwin D. A. Frank (II.), Allis Chalmers Company, Milwaukee, Wis.

California Branch of 1906. Louis A. Parker (IV.), 372–373 Pacific Electric Building, Los Angeles, Cal.

Panama Branch of 1906. Robert J. Lyons (XIII.), Culebra, Canal Zone.

And, in addition, the following, previously appointed:—

Central Branch of 1906. * Herbert S. Whiting (VI.), of Conant, Whiting & Co., Inc., 112 Water Street, Boston, Mass. ('Phone, Fort Hill 1683).

Correspondents-at-large:—

Representative of the (thirty) women in the class. Miss Eleanor Manning (IV.), care Lois L. Howe, Architect, 717 Tremont Street, Boston, Mass.

Past secretary of the class. Thomas Leslie Hinckley (XI.), 745 Osceola Avenue, St. Paul, Minn.

(2) In a similar manner, with the advice and approval of the Executive Council, the following men, living in Boston and vicinity, were appointed as "Boston Representatives of Courses":—

Course I. Frank A. Benham, New England Telephone & Telegraph Construction, 164 High Street, Boston, Mass.

Course II. Anthony P. Mathesius, Lombard Governor Company, Ashland, Mass.

Course III. Raymond J. Barber, Globe Optical Company, 403 Washington Street, Boston.

Course IV. Ralph T. C. Jackson, 169 Locust Street, Fall River, Mass.

Courses V., VII., and X. James B. L. Orme, of Orme & Tucker, 112 Water Street, Boston.

Course VI. Herbert S. Whiting, of Conant, Whiting & Co., Inc., 112 Water Street, Boston, Mass.

Course VIII. Edward B. Rowe, 85 Prince Street, West Newton, Mass.

* Chairman of Committee appointed at class dinner Feb. 12, 1908, to organize the Central Branch.

Course XI. Ralph R. Patch, 28 Lincoln Street, Stoneham, Mass.
Course XIII. C. Lyman Anson, Technology Chambers, Boston, Mass.

Acceptances have already been received from nearly all of these.

From the replies referred to above, it seemed to be a common occurrence that some of the fellows did not know many of their classmates who were living in their immediate vicinity, but we were glad to see that almost all the fellows were desirous of learning the whereabouts of any '06 neighbors in order to keep in touch with them.

If any classmate not located in any of the class branches noted above wishes to find out if there are any '06 men in his own vicinity, he has only to drop a line to the class secretary, who will be glad to look up the locality in the large and complete geographical register at the Alumni Association office.

The secretary spoke of the next All-Technology, General, Five-year Reunion which comes in June, 1909. This is a time when a great many alumni and their friends journey from long distances back to Beantown to join in the celebrations in memory of the old days at the Alma Mater. The best part of a week is spent in Boston and vicinity in field days, dinners, meetings, spreads, harbor excursions on steamers chartered for the occasion, and outings of all kinds. It is the grandest time for Tech men. Judging from the first reunion in 1904, the reunion in 1909 promises to exceed anything attempted heretofore. All the classes and organizations are preparing for it, and many of the distant men have already spoken of their plans for coming back next June to take this special course at Tech.

The following extract from *The Tech* indicates that Percy Tillson is helping to keep things moving in Philadelphia:—

Percy E. Tillson, secretary of the Technology Club of Philadelphia, has extended a cordial invitation to all undergraduates who may be in the vicinity of the Quaker city to a Field Day and outing of the club. The celebration will be held on the twentieth of June at the Woodbury Country Club, Woodbury, N.J.

II. *Personal Announcements and Notes.*

The secretary takes pleasure in recording the following announcements:—

"Mr. Benjamin Myer Brink announces the marriage of his daughter Mary to Mr. Norman Paul Gerhard, on Wednesday, the third of June, nineteen hundred and eight, Saugerties, New York. At home after August first, Emerson Street, Kingston, N.Y."

"Mr. and Mrs. Edward L. Stewart have the honor of announcing the marriage of their daughter Marion Edwards to Mr. Fay Wilmott Libbey, on Thursday, the nineteenth day of March, nineteen hundred and eight, at Trinity Church, Phœnix, Arizona."

Bruce R. Honeyman is engaged to Miss Marion Blakeley, of Tacoma, Wash. Honeyman has recently gone into business with Morris H. Whitehouse in Portland, Ore., and it is reported that they are doing a flourishing business, even in these dull times. It will be remembered that "Molly" Whitehouse won the Rotch Travelling Scholarship in Architecture. Enterprising spirit!

"On April 1, 1908, Miss Edith A. Swett, of Newton Highlands, Mass., was married to Mr. Wallace R. Hall, at the home of the bride's parents." Hall had recently returned from Porto Rico, where he worked with Yrizarry and Cartegena.

It is reported that Charles W. Mowry (II.) was married on April 16, 1908, but as yet we are unable to give the young lady's name. This spring it was reported, also, that Henry D. Loring (I.) had been married.

According to the past record of the class, the coming of June, a propitious season of the year (and leap year, too), should reveal a larger number of capitulations in the ranks of Naughty-six. However, the extreme shyness and quietude among some of the classmates at present persuades the secretary to believe that Cupid has really won many victories.

We have four men about to try for the degree of Ph.D. this fall: Warren Kendall is going to Columbia University, as noted below; John F. Norton, to Chicago University; George F. White chose Johns Hopkins; and H. P. Hollnagel is going to Germany. Clippings from *The Tech* read:—

SCHOLARSHIP TO TECH MAN

The University Council at Columbia University, New York, has just awarded a scholarship of the value of $150 to Mr. Burton W. Kendall, 1906, a resident of Gardner, Mass. The selection of the Columbia University Scholarships, of which thirty-two are awarded each year, is made from among a large number of graduates of the best colleges and universities in the country.

COURSE V. MAN ATTRACTS ATTENTION

J. Garfield Riley, 1906, Course V., who has recently been appointed to a position in the laboratory of the United States at Washington, D.C., is attracting considerable attention by his excellent work. He will probably be assigned later to a new station to be installed in Boston, at which investigations will be carried into the dairies in New England."

Harry Nabstedt, with Ambursen Hydraulic Company, has been put in full charge of the construction of a dam in Woodstock, Vt. —Charles Abbott has gone into the structural iron business with his father.—T. A. Nolan has also gone into general architectural contracting for himself.—Louis Maxfield is at present on the United States battleship "Illinois," and Charles E. Hovey is on the "Ohio." Address, U.S. Fleet, care P.M., New York, N.Y.—Yrizarry is on work installing a transmission line from Salto de Corherio to San Juan.—A. S. Thomas, Trowbridge, Haley, Burleigh, and Patterson have been seen in Boston on various occasions this spring. —McKernan is assistant to P. M. Blake, civil engineer, Newtonville, in hydraulic works.—I. D. Varshnei, of India, whose change of address is noted below, has been chosen to take charge of a model glass factory to be started for teaching the glass industry to East Indians. —Van Amringe, of 29 Crawford Street, Roxbury, Mass., is engaged as granite salesman.—Herbert W. Harvey was last reported with the O'Rourke Construction Company, New York City.—"At" Rippey (III.) is in Paris at present. We suppose he is either selling or buying gems.—"Joe" Santry is a member of the firm of Schumaker & Santry, engineers and manufacturers' agents, 141 Milk Street, Boston ('phone connections).—Laurence G. Blodgett is working

for his father, Mr. A. M. Blodgett, on various jobs in Mississippi and Louisiana. St. Louis address will reach him.—Max Coe left Boston the middle of June for Canada, to take up mill engineering work in a plant located near the city of Quebec.

III. *Changes of Address.*

The secretary has been fortunate in keeping track of the movements of the fellows: The following changes have been received since the last issue of the REVIEW:—

Professor Arthur K. Adams, New Mexico Sch. Mines, Socorro, N.M.—Odgen R. Adams, 5th and Pine Streets, Seattle, Wash.—John Anderson, O. Department, Fore River Shipbuilding Company, Quincy, Mass.—Edwin B. Bartlett, care Allis-Chalmers Company, Salt Lake City, Utah.—Fred R. Batcheller, 1101 Centre Street, Wilkinsburg, Pa.—William P. Bearce, 220 Devonshire Street, Boston, Mass.—David Bloom, S. S. White Dental Manufacturing Company, Prince Bay, N.Y.—Robert H. Booth, 4424 Eighth Avenue, Rock Island, Ill.—George W. Burpee, care W. C. K. & Co., 10 Bridge Street, New York, N.Y.—Herbert Callman, summer address, P.O. Box 302, Lawrence, L.I.—Earl G. Christy, 2820 Collingwood Avenue, Toledo, Ohio.—Prescott J. Clapp, Board of Water Supply, Brown Station, N.Y.—W. B. Clifford, 94 Summer Street, Fitchburg, Mass.—R. E. Cushman, Kingston, Mass.—E. Harley Daniels, Box F, Natick, Mass.—William J. Deavitt, care Minas Tecolotes, Y Anexas, Santa Barbara, Chih., Mexico.—Robert H. Doepke, care The Alms & Doepke Company, Cincinnati, Ohio.—Sylvester B. Eagan, 993 Delaware Avenue, Buffalo, N.Y.—Nugent Fallon, 489 Walnut Avenue, Jamaica Plain, Mass.—William C. Furer, United States Naval Station, Pearl Harbor, Honolulu, T.H.—William W. Gaylord, Torrington, Conn.—Norman P. Gerhard, 53 Emerson Street, Kingston, N.Y.—Michael J. Gibbons, Jr., 247 McDaniel Street, Dayton, Ohio.—E. C. Groesbeck, 27 W. 73d Street, New York, N.Y.—W. R. Hall, 139 Winchester Street, Newton Highlands, Mass.—Richard F. Hammatt, care United States Forest Service, Washington, D.C.—Alfred R. Heckman, 21 Erie Street,

Elizabeth, N.J.—T. L. Hinckley, 745 Osceola Avenue, St. Paul, Minn.—William W. Hosmer, Jr., P.O. Box 740, Hartford, Conn.—Walter A. Hotchkiss, 7 Blaine Street, Hornell, N.Y.—Charles E. Hovey, United States steamship "Ohio," care Postmaster, New York, N.Y.—Henry S. Hubbell, Ashburnham, Mass.—Isa W. Kahn, 349 Massachusetts Avenue, Peoria, Ill.—R. D. Kelley, care Engineering Department, Union Depot, Terre Haute, Ind.—Warren Kendall, Columbia University, New York, N.Y.—J. W. Kidder (VI.), 22 Brook Street, Somerville, Mass.—Harold Kingsbury, Box 38, Washington, D.C.—Abraham L. Lampie, 41 Lindsey Street, Dorchester, Mass.—Lieutenant Charles T. Leeds, United States Engineer Office, 723 Central Building, Los Angeles, Cal.—F. W. Libbey, 2144 West Madison Street, Phœnix, Ariz.—William H. Lincoln, Reclamation Service, Glendive, Mont.—J. N. McKernan, 28 Bickerstaff Street, Boston, Mass.—W. E. H. Mathison, 80 Ingersol Grove, Springfield, Mass.—Henry S. Mears, 721 Flanders Street, Portland, Ore.—Harold Morse, Newton Lower Falls, Mass.—T. A. Nolan, 16 Paul Gore Street, Jamaica Plain, Boston, Mass.—Chadwell S. Peirce, 2314 Harrison Street, Evanston, Ill.—Mark H. Place, Milton, Wis.—J. H. Polhemus, Caney, Kan.—Edw. B. Pollister, Robinson Water Light and Heat Company, Robinson, Ill.—Charles D. Richardson, Underwriters' Lab., 336 Fourth Avenue, Pittsburg, Pa.—Wiear L. Rowell, 169 Humphrey Street, Swampscott, Mass.—Guy C. Simpson, 100 Prince Street, West Newton, Mass.—Ralph N. Soule, 616 Carlton Avenue, Brooklyn, N.Y.—Philip B. Stanley, Stanley Place, New Britain, Conn.—R. C. Thayer, 10 Hamilton Avenue, Dorchester, Mass.—Ishwar das Varshnei, Samarth Vidyalaya, Talegaon, on G. I. P. Railway, District Poona, India.—Clifford R. Wilfley, Hostotipaquillo, Jalisco, Mexico.—H. L. Williams, Box 106, Deadwood, So. Dak.—Leland S. Woodruff, 5029 Linden Street, E. Norwood, Ohio.

IV. *New Addresses.*

The secretary wishes to acknowledge much help rendered him by the Alumni Office in locating, for the first time since they left school,

the following classmates: Arthur G. Bruce, Hda. Florida, Yauco, Porto Rico.—Walter E. Calley, 112 Upland Road, Cambridge, Mass. —Edward Fifield, 430 Ellison Street, Paterson, N.J.—Edward W. Forbes, care Proctor & Gamble Company, Ivorydale, Ohio.—Harold S. Graham, P.O. Box 313, San Juan, Porto Rico.—Leroy P. Henderson, 65 Dodge Street, Beverly, Mass.—Richard L. Hogner, 328 Massachusetts Avenue, Boston, Mass.—Roy G. Kennedy, 65 Ashland Avenue, Buffalo, N.Y.—Milton Lichtenstein, Locust Avenue, San Rafael, Cal.—Herbert D. McKibben, Esterly Construction Company, Adeline and Oregon Streets, Berkeley, Cal.—John T. Mahar, 339 South Station, Boston, Mass. (graduated with 1907).—John W. Merrow, care R. M. Blakie, United States Banking Company, Mexico City, Mexico.—Miss Sarah E. Potter, Girls' High School, West Newton Street, Boston, Mass.

V. *Letters.*

"Bill" Neilson and Healy ('03) are in business together: "Neilson & Healy, Contracting Engineers, United States Deputy Mining Surveyors, Wonder, Nev." "Bill" writes in part: "I have been so busy for the past year that I haven't been able to get East or even out of the State. (Haven't seen a railroad for a year and only once in two years.)" He says Howard Blake, the old captain of our star basket-ball team, is keeping things moving on the Pacific Coast, as secretary-treasurer of the New California Association of the M. I. T.

In reply to an inquiry from the secretary, Charles F. W. Wetterer wrote just after the flood in Dallas that "the most damage was done to the steam railroads, our interurban line, our electric light plant," but he also adds that they are pretty well straightened out now.

R. S. Clark (XIII.), who has left the coast and gone to Nevada to look after the business of the Sullivan Machinery Company throughout that State, met Jack Kinnear, who, with his wife, is living near Goldfield. Clark does not seem to be wholly in sympathy with the country out there:—

"This section of the country is surely a desert, with little to look at but sage brush, and sometimes that is lacking. But, for all its barrenness, I am told that it 'grows on one,' whatever that means. Hope it doesn't grow on me."

The death of Forrest Lord was reported in April. He was at Tech not much more than a year, and had been working with his father in the twine business in Boston. Although a stocky fellow, he was sick with heart trouble for a long time. He died at his home in Melrose, March 10, 1908.

1907.

ALEXANDER MACOMBER, *Sec.*, Fern, Shasta County, Cal.
BRYANT NICHOLS, *Res. Sec.*, 138 Fremont Avenue, Everett, Mass.

I.

With this last month our class finishes its first year as alumni. It is the intention of your secretaries to issue soon a report containing an outline of the year's work, statistics of the class, financial report, etc. While much of this matter has appeared in the REVIEW, it is thought that it will be of value in maintaining class interest, and will form a valuable reference. The event of the year—the reunion—was a great success. A full account is given here, and, as those who could not be present read it, they will plan to be on hand next year when the big reunion occurs. The Reunion Committee is to be congratulated on its work.

REPORT OF THE REUNION

On May 5 the following letter was mailed to the 650 fellows whose names appear on the class-roll. The committee wish to publicly thank J. E. Garratt, J. M. Barker, G. S. Gould, and C. R. Denmark, who assisted in this work.

Boston, April 28, 1908.

To the Members of the Class of 1903:

Two committees appointed at the January meeting to arrange for the First Annual Reunion of the Class were given a free hand in making the following announcements:—

The REUNION will be held in Boston, Tuesday, June 9, 1908. The Alumni Association and the Association of Class Secretaries will assemble upon arrival at the Technology Club, 84 Boylston Street, during the entire day. The HEADQUARTERS for the Class of '03 will be at HOTEL WESTMINSTER, Copley Square, where a room will be at the disposal of the members of the Class after 9.30 A.M. Members are urged to use this room as a meeting place and as a place for checking baggage. Some of the committee will be in hand to greet the fellows, and punch will be served throughout the day. All are requested to register there some time during the day.

DINNER will be served at 6.45 P.M. SHARP, at Hotel Nottingham. Price per plate is two dollars ($2.00), which covers all expenses of the reunion except admission to the Pops. Results of the Class election will be announced at this dinner.

After the dinner the Class will march in a body to Symphony Hall to the Pops. Full particulars regarding the Pops will be sent you by the Association of Class Secretaries.

Enclosed you will find a copy of the proposed new Class Constitution. The graduation of the Class making it necessary to draw up a new Constitution, the Reunion Committee was authorized by the Secretary to do so, and present the same to the Class. On the enclosed ballot you will find opportunity to cast your vote for or against this Constitution. Inasmuch as the new Constitution has not yet been ratified, it was necessary that some committee should act as the first nominating committee. The Reunion Committee was authorized by the Secretary to act in this capacity, and we enclose a ballot with the nominations called for by the new Constitution.

You will also find a reply sheet which every member is urged to fill out and return with his ballot. Among the items on this sheet you will find one pertaining to **SALARY.** *As is the usual custom, it is proposed to announce at the annual dinner the average salary of the Class. For this purpose we are enclosing a slip upon which your salary is to be written. The slip is to be returned sealed in the envelope addressed to Dean Burton. The Dean has consented to receive these sealed envelopes, and to shuffle them so that it will be impossible to ascertain to which individual the salary indicated upon any slip may belong.*

All members are earnestly requested to return ballot and reply sheet, whether or not they expect to be present. All replies must be in by Monday, May 25, 1908. We had sixty-seven men at the informal Class dinner, Jan. 15, 1908. We should have many more at this, OUR FIRST REUNION DINNER. It is absolutely necessary we hear from every one promptly. Don't delay answering. Plan to be with us June 9.

BRYANT NICHOLS, *Chairman,*
WILLIAM W. BIGELOW, *Secretary,*
CHARLES E. ALLEN,
CLARENCE D. HOWE,
HAROLD S. WOODSIDE,
Reunion Committee.

The constitution proposed follows:—

CONSTITUTION

ARTICLE I.

NAME

This organization shall be called the Class of 1907 of the Massachusetts Institute of Technology.

ARTICLE II.

PURPOSE

The purpose of the organization shall be to further the interests of the Institute and to maintain the unity of the class.

ARTICLE III.

MEMBERSHIP

All graduates of the class, and any who, during their Institute course, have been affiliated with the class, shall be eligible for membership.

ARTICLE IV.

OFFICERS

The officers shall consist of a President, two Vice-Presidents, a Secretary-Treasurer, a Resident Secretary, two Auditors, and an Executive Committee. One of the Vice-Presidents and the Resident Secretary shall be residents of Boston or vicinity. The Executive Committee shall consist of the above officers and one member at large.

ARTICLE V.

DUTIES OF OFFICERS

SECTION 1.—PRESIDENT. It shall be the duty of the President to preside at all meetings of the class and of the Executive Committee, and to perform all the duties usually pertaining to this office.

SECTION 2.—VICE-PRESIDENTS. It shall be the duty of the Vice-Presidents to assist the President in the performance of his duties.

SECTION 3.—SECRETARY-TREASURER. It shall be the duty of the Secretary-Treasurer to keep accurate minutes of the class and of the Executive Committee; to keep a complete enrolment of the members of the class; and to issue notices of all meetings of the class and of the Executive Committee. He shall represent the class at the Association of Class Secretaries. He shall keep all books and accounts of the class, and shall be custodian of the class funds. He shall make no expenditures unless authorized by the Executive Committee.

SECTION 4.—RESIDENT SECRETARY. It shall be the duty of the Resident Secretary to assist the Secretary and assume his duties in his absence.

SECTION 5.—AUDITORS. It shall be the duty of the Auditors to examine annually the books and accounts of the Secretary-Treasurer, and to report upon the same to the Executive Committee.

SECTION 6.—EXECUTIVE COMMITTEE. It shall be the duty of the Executive Committee to direct the affairs of the class.

ARTICLE VI.

ELECTIONS

The election of officers and committees shall take place on the third Monday in May of each year. Elections shall be conducted by a Nominating Committee of three members which shall have been elected at the previous election. This committee shall submit to the class at least one nominee for each office, and at least three nominees for the succeeding Nominating Committee. This committee shall receive additional nominations signed by at least five members of the class, and shall place the same upon the official ballot. This committee shall prepare the official ballot and shall send a copy of the same to each member of the class at least four weeks before the election. The result of the election shall be announced at the annual dinner, and shall be published in THE TECHNOLOGY REVIEW. Officers shall assume their duties, and the fiscal year shall begin on the first day of July.

ARTICLE VII.

DUES

The annual dues shall be one dollar, and shall be payable for the succeeding year on or before the first day of July.

ARTICLE VIII.

RATIFICATION

This constitution shall take effect when ratified by two-thirds of those voting, and shall supersede all previous constitutions of this class.

ARTICLE IX.

AMENDMENTS

Amendments may be submitted to the class by the Executive Committee, and shall take effect when ratified by two-thirds of those voting.

The class dinner was held, as announced, in Hotel Nottingham on Commencement Day, June 9, at 5.45 P.M. Two rooms in the same hotel were at the disposal of the class during the day. About 4.30 the fellows began to gather, and it seemed like former times as one by one they arrived and were greeted by those who had come earlier. They were a merry crowd as they smoked together, told of interesting experiences, and partook of the punch provided by the hotel. By 5.45 the rooms were filled to overflowing, and soon after dinner was served. In the class registration book purchased by the committee, sixty-three names are written, as follows:—

W. L. Woodward, H. S. Wonson, John Tetlow, Bryant Nichols, F. S. MacGregor, P. R. Nichols, L. L. Allen, T. J. Holmes, W. W. Bigelow, E. V. Potter, H. B. Hastings, G. W. Otis, C. D. Howe,

A. O. Christensen, E. H. Squire, C. E. Allen, C. A. Bowen, Laurence Wetmore, A. F. Stevenson, R. C. Albro, P. B. Walker, R. K. Taylor, L. C. Whittemore, F. B. Schmidt, P. J. Colvin, Kenneth Moller, C. N. Draper, A. B. Arnold, R. W. Lindsay, W. D. Robinson, W. S. Wilson, H. P. Farrington, F. W. Morrill, C. F. Baker, P. L. Cumings, E. S. Wires, Captain S. A. Kephart, U.S.A., Allen Pope, F. G. Dempwolf, W. W. Pagon, H. B. Hosmer, J. B. Harlow, M. E. MacGregor, M. W. Sage, J. E. Tresnon, J. E. Garratt, R. A. Martinez, E. H. Sargent, D. G. Robbins, F. T. Moses, R. D. Gale, L. A. Dickinson, H. M. Lewis, Jr., Gilbert Small, A. N. Rebori, K. G. Chipman, C. R. Bragdon, W. P. Monahan, E. G. Lee, S. E. Rockwell, Lawrence Allen, J. J. Thomas, G. R. Norton.

W. L. Woodward was toastmaster, and after words of greeting called upon Lawrie Allen. We were all the more delighted to have Lawrie with us because he had written that he could not come. Tuesday morning, however, Charlie Allen received a postal from him which read: "Wow! Meet me at Back Bay at 5.40!" Lawrie spoke on the joys of married life, and called on Hud Hastings to back him up in urging all the fellows to take the step.

Bryant Nichols gave some statistics, most of which were gathered from the replies just received. From the class-roll secured from the alumni office the following figures were made up:—

Total number connected with 1907		650
Number connected with 1907 only		506
Number connected also with other classes		144
Number graduated with 1907		207
Entered first year	117	56.5%
Entered after first year	48	23.2%
Entered from other classes	42	20.3%

The average salary received by 1907 men, made up from 128 replies, is $970.04. The highest is $2,400, and the lowest is $250. 8.6 per cent. of the class get $1,500 or more, and 44.5 per cent. receive $1,000 or more. The total salary represented by the 128 men who replied is $124,165.

Other interesting items obtained from the reply sheets will appear under the heading "Personal Notes."

Woodward announced the result of the class election, which follows: president, D. G. Robbins; vice-presidents, F. S. MacGregor and W. L. Woodward; secretary-treasurer, Alexander Macomber; resident secretary, Bryant Nichols; auditors, R. W. Lindsay and R. G. Woodbridge; member-at-large of the executive committee, L. W. Brock; nominating committee, R. C. Albro, J. M. Barker, and G. S. Gould.

Don Robbins, as the new president, said a few words, promising to do his utmost to advance the welfare of the class.

It was getting so late by this time that the fellows had to lose the last part of the dinner in order to reach Symphony Hall for the Pops before eight o'clock. The class formed in column of fours in front of the hotel, and marched to the hall. Several of the fellows who could not get round to the dinner were present at the Pops. Among these were noticed E. H. Packard, R. E. Keyes, John Evans, and G. D. Luther.

STATEMENT ON FINANCES OF THE REUNION

Receipts

From Alexander Macomber, Treasurer	$25.00
From First Alumni Dinner Committee	.80
" Sale of dinner tickets	126.00
	$151.80

Expenditures

To 63 dinners at $1.50	$94.50
" 2 gallons punch	6.00
" printing circulars, etc.	21.00
" printing menus	4.25
" class registration book	5.75
" cigars	4.50
" postage	8.39
" miscellaneous expense	3.00
	$147.39
Cash on hand	4.41
	$151.80

II.

PERSONAL NOTES

At the place of honor under this heading should come the list of the members of the class who are married or engaged, this information being taken, for the most part, from the reply sheets. The following men are married: Lawrie Allen, L. H. Cutten, C. S. Dean did the act June 30, Kirk Dyer, Hud Hastings, C. R. Lamont, F. E. Langenheim, "Stud" Leavell, Moller, Harry Moody, F. T. Moses, P. R. Nichols, Al Pope (on June 10, and yet he was at the dinner on the 9th! a loyal man!), Winsor Soule, G. R. Taylor, S. P. Thacher, C. A. Vose, R. B. Sanders, Oscar Starkweather, and the following announcement will be of special interest to all:—

Miss MARGUERITE A. FABENS
announces the marriage of her sister
MARY CHANDLER
to
Mr. EDWIN DEXTER BOLES
on Saturday, March the twenty-first
nineteen hundred and eight
St. Philip's Church
London

The list of those engaged is much longer. It is: L. L. Allen, C. A. Bowen, C. R. Bragdon, L. W. Brock, A. L. Burwell, E. L. Chaffee, H. R. Chase, J. A. Davis, S. G. Emilio, J. M. Gaylord, A. S. Black, R. H. Hall, J. B. Harlow, F. C. Jaccard, H. A. Kingsbury, A. T. Kolatschevsky, A. G. Lang, E. G. Lee, E. H. Packard, G. E. Prouty, J. L. Walsh, A. E. Wiggin, R. H. Willcomb, E. C. Wilson, E. S. Wires. Congratulations to all these men!

P. L. Adams, who has been an instructor in mathematics at the Oregon Agricultural College, expects to resume work at Tech this fall.—R. C. Ashenden (ex '07) may be reached at the Burbank House, Pittsfield, Mass.—Bob Albro received his degree on June 9. —Charlie Allen will work in Greenfield, Mass., this summer, and

expects to return to the Institute to teach another year.—Lawrie Allen says he is "happy, poor, working hard. Homesick for old Boston, but pretty contented in a little home of my own."—J. M. Baker, 7416 Bond Avenue, Chicago.—Rutherford Bingham is at 4259 5th Avenue, Pittsburg.—E. S. Chase, 14 Berkshire Street, Worcester, Mass.—J. S. Coupal is with the Mammoth Mining Company, Kennett, Cal.—Crosby, in Chicago, says he is not engaged, because "I cannot convince myself that Mormonism is right, and otherwise engagement were impossible."—W. D. Davol, 143 Amity Street, Brooklyn, N.Y.—C. N. Draper is now S.B.—Otis Fales is now in New Orleans with the Gregg Company, Ltd.—L. R. Fredendall, the adjutant of M. I. T. C. C. in '03, is now a lieutenant in the Second United States Infantry, stationed at Fort Assinniboine, Mont.—R. F. Gale, is at Rossman, N.Y.—H. W. Gerhard, 39 Strong Place, Brooklyn, N.Y.—S. C. Godfrey (ex '07) is a cadet at West Point.—George Griffin is with the United States Department of Agriculture, Chevy Chase, Md.—B. C. Gupta writes from London, England: . . . "My own life has been rather uninteresting so far, but the future looks very bright and cheerful. I worked for four months with the British Thomson-Houston Company on switchboard design, and earned the magnificent salary of $2.50 a week, nothing found. The British companies, one and all, expect work, and give no compensation. It is against their principles to pay for work done. I have just been appointed an assistant engineer in the large power transmission scheme at Kashmere on a very decent salary and free quarters. . . . If I can make a success out of life, and if any of you boys would like to cast in your fortunes with me in far-away India, do not hesitate to ask for information. I am the humble servant of the class of 1907. . . . I cannot express my longing in actual words to be with the dear old bunch again. My future home in Kashmere will always be a place of welcome to my friends and brothers of 1907." . . . Gupta's address after August, 1908, will be "Care of Major De-Labiniere (chief engineer), Seinagar, Kashmere, India."—H. R. Hall, Colonial Inn, Newburg, N.Y.—F. S. Hamilton (ex '07) is mine manager, Webb City, Mo.—Bert Johnson, 109 Luzerne Avenue, Pittsburg.—J. F. Johnston, Jr.,

Capitol Building, Sacramento, Cal.—W. F. Kimball, writes, "I never fully appreciated the multiplicity of 'tonsorial parlors' in and near Boston until I received a letter from Pastoriza, Provo, Utah, in which he says he had to go forty miles to get a hair cut last winter."—F. H. Kales is superintendent of light-house construction, Honolulu, H.I.—E. F. Kelly, 113 East 10th Street, Erie, Pa.—A. S. Kendall, 876 Beacon Street, Newton Centre, Mass.—H. A. Kingsbury, Box 38, Washington, D.C.—Lamont and Kolatschevsky both received their degrees June 9.—J. H. Link, 319 North 40th Street, Philadelphia.—H. D. Loring, 304 West 28th Street, New York.—"Stud" Leavell writes: "Am flirting with the Mexican government about a concession. Have adopted as my motto, 'God help the rich: we poor can starve this year.'"—H. J. C. MacDonald is at Searchlight, Nev., with the Quartette Mining Company.—J. A. McElroy, 101 Meigs Building, Bridgeport, Conn.—M. E. MacGregor is instructor in mathematics at Mercersburg Academy, Mercersburg, Pa. Mac still keeps up his athletics and coaches the track team there.—A. P. Mansfield, 591 La Salle Avenue, Chicago,—B. F. Mills, 126 Appleton Avenue, Pittsfield, Mass.—J. G. Moore, 407 West 2d Street, Elmira, N.Y.—M. H. Pease is with the El Paso Electric Company, 209 Upson Avenue, El Paso, Tex.—John Rehn writes: . . . "I am sorry my attendance with you must be only in spirit. You know that I'd like to be there, and help sing bass or mezzo soprano with the fellows. Remember me to them. I wish you all well." . . .—W. D. Robinson, 8 Harrison Street, Stapleton, Long Island, N.Y.—DeW. C. Ruff, care Boyd Burns Company, Vancouver, B.C.—R. H. Willcomb is with the B. & M. Smelter, Great Falls, Mont.

1908.

JOHN T. TOBIN, *Sec.*, 43 East Newton Street, Boston, Mass.

On Friday, April 10, 1908, the thirty-second regular meeting of the class was called to order by Vice-President Barnes at 1.10 P.M. There were fifty members present. A committee of four was

appointed to draw up resolutions expressing regret at the death of Arthur Clinton Richmond, ex '08. John S. Barnes, A. G. Place, E. I. Williams, and Maurice E. Allen acted for the class.

Whereas Almighty God has chosen to remove Arthur Clinton Richmond from our ranks; and

Whereas the members of the class of 1908 of the Massachusetts Institute of Technology feel a deep sorrow in the loss of one who, by his earnest work and his quiet, friendly manner, has won the esteem of all,—therefore be it

Resolved, That by the decease of our classmate the Institute has lost a valuable exponent of its ideas, and the class has lost a friend and helper; and be it further

Resolved, That we hereby extend our sincere sympathy to the bereaved family; and be it further

Resolved, That a copy of these resolutions be spread on the minutes of the class, and that they be published in *The Tech*.

The thirty-third regular meeting was held on Wednesday, April 15, 1908. After a stormy discussion it was decided that the notices from the Faculty regarding degrees should not be given out at the annual class dinner. This feature of former Senior class dinners was done away with because of a feeling that it would mar the enjoyment of the dinner for many men, and that it was not fair to the men who do not receive degrees.

H. A. Rapelye, president of the class, introduced the question and called for the opinion of the class. J. T. Tobin, after some discussion, moved that the degree notices be given out at the dinner, the class voting against the motion 50 to 35.

The setting of the date for the dinner was left to the class day committee. It was also decided to send a note of consolation to Professor Porter, whose wife had died suddenly.

The thirty-fourth regular meeting took place at the American House, June 4, at 8.30 P.M., on the night of the Senior banquet. President Rapelye presided. It was voted that the graduate officer of the class should consist of a graduate secretary. John T. Tobin was elected to the office. A vote of thanks was moved to the Tech-

nology Clubs of New York and Philadelphia for their kind invitations to membership.

At a special meeting, called just before the graduation exercises on Tuesday, June 9, Rudolph Weiler and Loyd Sutton were nominated for assistant class secretary. Weiler was elected.

In the popular ballot for the class day committee the three marshals chosen were, in order: Herbert Thurston Gerrish, Clifford Hall Boylston, Francis Harrington McGuigan, Jr. The other members of the committee were Horace Ethan Allen, Maurice Everett Allen, Henry Washington Blackburn, Langdon Coffin, Samuel Harris Daddow, Raymond Edward Drake, Leslie Burton Ellis, Winthrop Drew Ford, Charles Alphonsus Gibbons, Jr., George Thummel Glover, Lafayette Boyd Hedge, Bernard Shepard Leslie, Thomas Whitley Orr, Harold Smith Osborne, William Joseph Pierce, Joseph Pope, Joseph Gilman Reid, Leavitt Weare Thurlow, John Theodore Tobin, Kurt Vonnegut, Harry Webb, Edgar Irving Williams, Harry Andrew Rapelye, *ex officio*.

The committee wishes to express a vote of thanks to Professor and Mrs. Pearson for the very enjoyable evening which they had the pleasure of spending at their home on Wednesday, June 3. It certainly was a treat.

The following '08 men were successful in the *Technique* rush. Of the first five copies, numbers two, three, and four fell to George Glover, H. J. Ruggles, and P. R. Powell, respectively. R. W. Parlin, R. W. Ferris, L. W. Thurlow, H. E. Allen, and M. L. Bullard were among the lucky recipients of numbered copies.

1908 extends its best wishes to Carl Gram, '09, captain of next year's 'varsity track team. May he lead the team as successfully to victory as did Captain Tommy Orr, '08, our own pride!

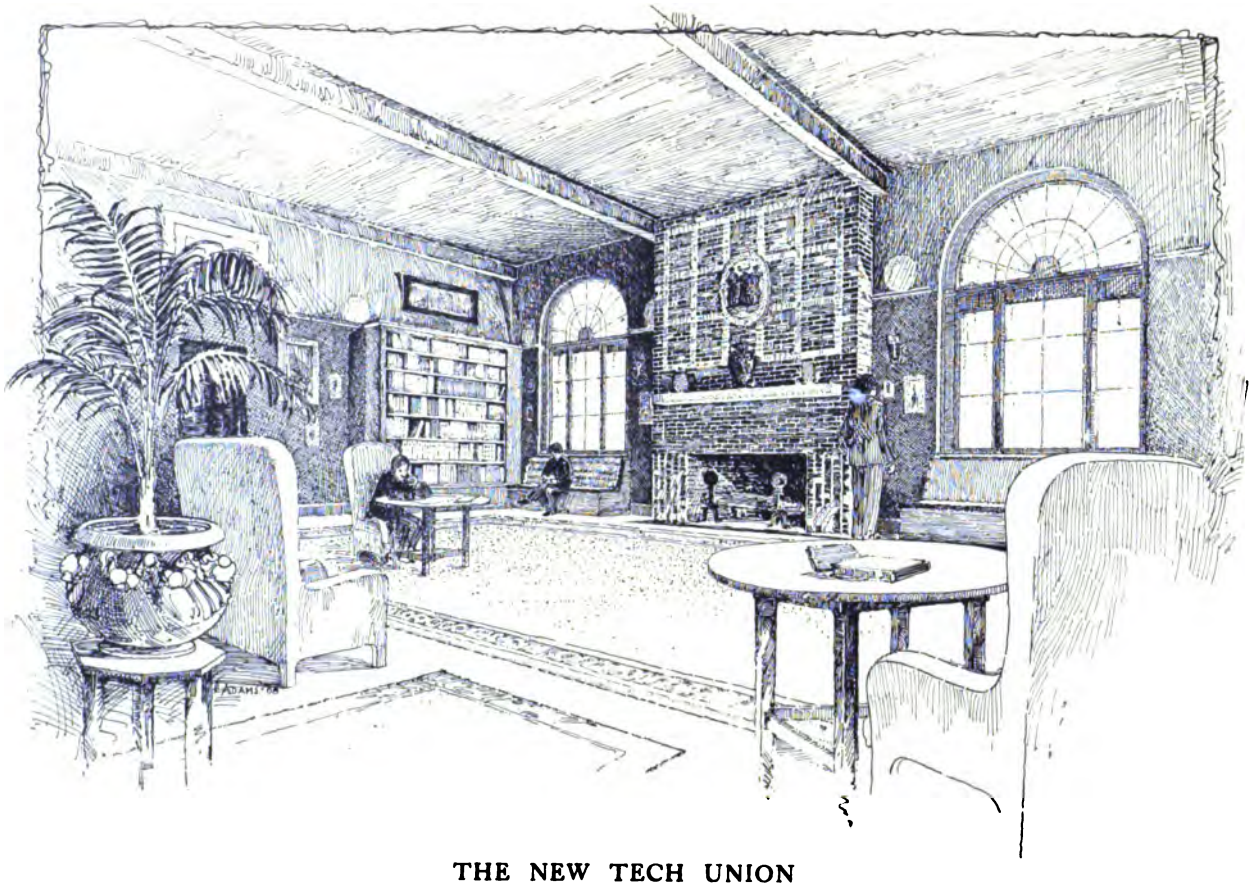
The class also congratulates George Schobinger, '08, on the winning of the coveted "T," for which he strove so manfully.

All '08 men are very proud of the Senior Portfolio. The very efficient committee which had the work in hand consisted of Harry Webb, chairman, "Sam" Daddow, "Bill" Barton, "Hobe" Ferris, and "Ed" Williams.

The C. E. Society showed their appreciation of the splendid work

of this year's president, Raymond W. Parlin, by presenting him with a handsomely engraved gavel.

Wm. McAuliffe and Leo S. Stone will return to the Institute in the fall.—Howard B. Luther will also return to the Institute in the fall as an assistant in Course I.—V. E. Bird has a position with the New England Telephone Company. Address, Tech Chambers. —H. W. Dun is going to work with the New York Central Railroad, and will return to Tech in the fall.—W. F. Dolke and E. I. Williams will return as graduate students in architecture.—R. E. Schirmer will attend the Columbia School of Mines next year.—H. W. Blackburn has a position as draughtsman at the Pacific Mills, Lawrence, Mass.—Karl R. Kennison will be with the Factory Mutual Fire Insurance Company, 31 Milk Street, Boston.—Richard C. Collins has a position in the Dolphin Jute Mills, Paterson, N.J.—H. C. Faxon is going into civil engineering at Braintree, Mass.—Carl H. Bangs is to be an instructor in the mechanical engineering department of the University of Vermont.—Masanao Yendo, address care Japanese Ambassador, Berlin, Germany.—T. Tse will spend the summer with the Great Bras d'Or Mining Company, Baddeck, N.S. He will return to Tech in the fall for graduate study.—H. A. Rapelye will return to Tech in the fall as assistant to the President. —George Glover will be with the Lima Locomotive & Machine Company, Lima, Ohio.—Alfred Scannel is going into business with his father in Lowell.—Paul A. Esten will return as a private assistant next year.—Paul H. Heimer has a position as assayer with the Enterprise Mining Company, Cooney, New Mexico.—Warren W. Karnan is to be an assistant chemist with the Massachusetts State Board of Health, address Room 502, State House, Boston, Mass.— H. E. Batsford is to enter chemical research work with the Roessler & Hasslacher Chemical Company, Niagara Falls, N.Y.—A. B. Babcock and H. Flaherty will return to the Institute in the fall.— Raymond W. Parlin is going with W. S. Johnson, consulting engineer. —George Schobinger has a position with the Chicago Transit Commission.—C. R. Lamont leaves for Salt Lake City next Saturday. He will engage in mining out there.



THE NEW TECH UNION

The Technology Review

VOL. X. OCTOBER, 1908 No. 4

THE NEW TECH UNION

That the Corporation of the Institute is directing its attention with earnestness to the social condition of undergraduates is shown by the appointment, last year, of a Corporation Committee on Student Welfare, and this movement has had immediate fruition in the establishing of an almost luxurious social centre for the students at the very doors of their lecture-rooms and laboratories.

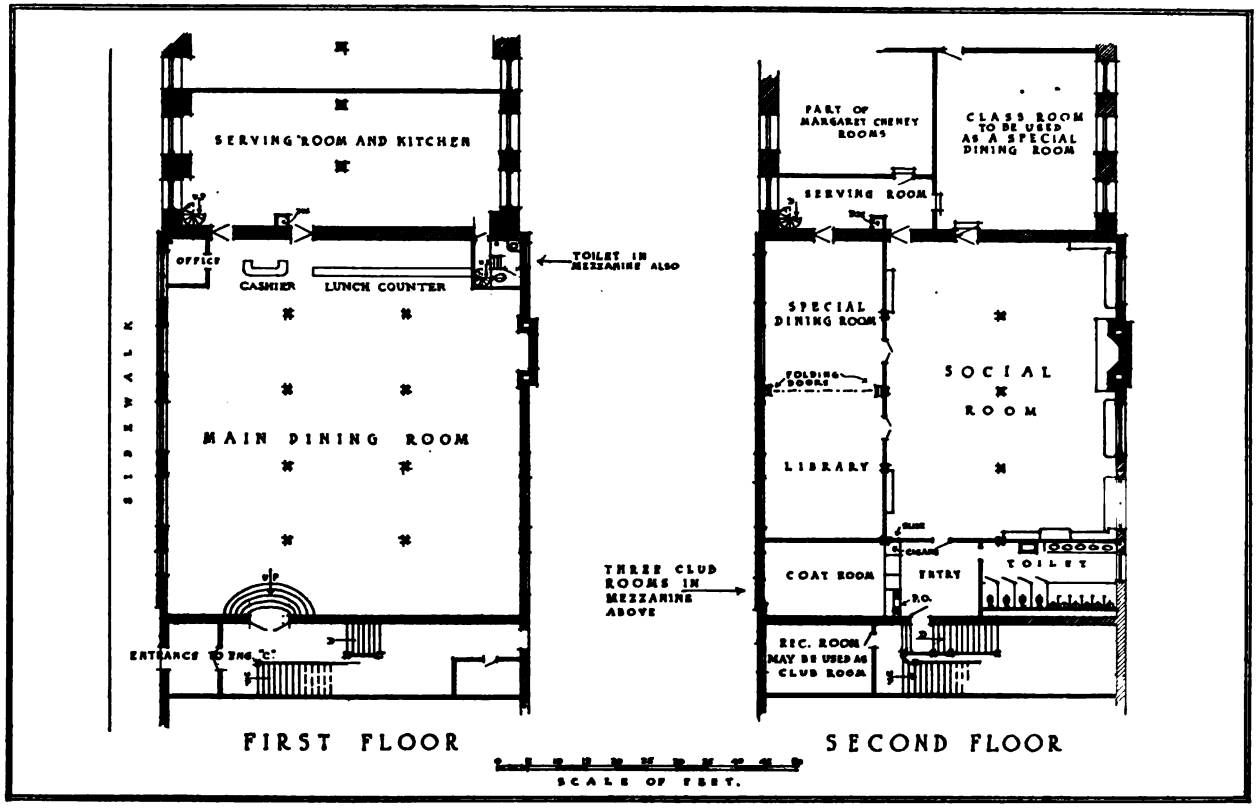
The new Tech Union is practically a modern club, embodying all the comforts and conveniences that are really worth while, having no restrictions that are not necessary in every club, and where the Tech student, rich or poor, may feel that he is really at home. Not only has the Corporation, generously assisted by friends of the Institute, afforded facilities which will amply suffice until the Walker Memorial can be built, but it has recognized the importance of placing responsibility on students, so far as this is feasible, and has appointed a governing committee of the Union, consisting of five undergraduates and four older men, so that the new Technology Union is run for the students and by the students, and its general success rests with them. The experiment is interesting because of the possibilities of further expansion in other directions if the results show that executive traits can be developed during student years.

The new Tech Union is located on Trinity Place, between the Pierce Building and Engineering C, occupying a space sixty feet long by sixty feet wide. The social room on the

second floor is a commodious room, high-studded and airy, and at the same time very homelike and comfortable. The principal feature, as one enters the social room, is a hospitable fireplace, capable of taking in five-foot logs, and the welcoming suggestion of upholstered couches and window-seats and comfortable easy-chairs, set off by harmonizing colors of walls, rugs, and draperies. As will be seen from the plan, this room occupies about two-thirds of the area of the second floor, outside the coat-room, entry and toilet. The other third of the area has been made into two rooms,—one of them a special dining-room, and the other a library, with folding doors between, so that they can be thrown into one large room capable of seating one hundred and twenty-five. Inasmuch, however, as there is a large class-room in the Pierce Building, to which connection has been made with the Union, which can be used for a private dining-room, it is thought that the encroachments on the library will be very few, and in this room, therefore, have been placed a large round table and chairs, the gift of the class of '08.

On the ceiling of the social room hang the various class banners of cardinal and gray, which are used on Tech nights at the Pops, and on the walls are large pictures of the various Tech shows. On the reading table in the library are newspapers, magazines and other periodicals of interest to the students, and in the bookcases on the walls is the library which was given by the late Frank H. Cilley ('89) before his death. Connected with the private dining-room, and also with the recitation-room which will be used as a dining-room, is a serving-room, which has connection with the kitchen by a dumb waiter as well as a spiral staircase.

One enters the social room through an ample lobby, which has on one side a coat-room and on the other the lavatories. On the coat-room counter are the post-office boxes which


SERVING ROOM AND KITCHEN
OFFICE
CASHIER
LUNCH COUNTER
TOILET IN MEZZANINE ALSO
SIDEWALK
MAIN DINING ROOM
ENTRANCE TO ROOMS "C"
FIRST FLOOR
PART OF MARGARET CHENEY ROOMS
CLASS ROOM TO BE USED AS A SPECIAL DINING ROOM
SERVING ROOM
SPECIAL DINING ROOM
FOLDING DOORS
SOCIAL ROOM
LIBRARY
THREE CLUB ROOMS IN MEZZANINE ABOVE
COAT ROOM
ENTRY
TOILET
REC. ROOM MAY BE USED AS CLUB ROOM
SECOND FLOOR
SCALE OF FEET.

have heretofore been located in Rogers Building, also a counter for cigars and tobacco. A public telephone is also located in the lobby. The social room will be open from eight in the morning until eleven o'clock at night every day in the week.

When the Union was first discussed, it was hoped that the funds would be sufficient to build a three-story edifice, the third story to be devoted to offices where the student activities could be grouped together and where would be located alumni headquarters. It may be somewhat surprising to the older alumni, to know that the amount handled by these student activities runs considerably above $25,000 a year. This involves a large amount of book-keeping which has formerly been done by the students, necessarily in a very imperfect way. Arrangements were made last year by which some of this work was done at alumni headquarters, and it is now proposed to offer such facilities that all of the book-keeping and filing of this kind will be taken care of in this way. This will relieve many students of work which has taken a large part of their time at the expense of their studies, and which, even at the best, has not been done in a business-like manner.

It was found, however, that a three-story building could not be built for the amount appropriated, so that the alumni headquarters will remain in Rogers Building, the student activities occupying the three small offices on the mezzanine floor over the coat-room and toilet, and another somewhat larger office in the hall of Engineering C. Another small office in the hall will probably be available very soon. It will be very inconvenient for some of the student organizations to be so far removed from alumni headquarters, but it is hoped that in the near future some arrangement can be made to have this office brought nearer to the Union.

The interest which the students are exhibiting in the Union, which will be opened a few days before the REVIEW goes to press, indicates that it will not only serve its purpose, but will also be an inspiration to them so to organize their student activities that this outside work shall not menace the standing of the men connected with them, but shall be an important part of their education.

The lunch-room, on the first floor of the Union, is a great departure from anything that we have ever known at Technology. The evolution from Jones's restaurant in the old drill shed, where Walker now stands, to the new lunch-room, is very great indeed. The room is the full size of the building, sixty feet by sixty feet. The kitchen, which is located in Pierce, is as large as those in some of Boston's first-class hotels, and is provided with modern apparatus for cooking food and keeping it in proper condition to be served. The side walls of the buildings have large window openings, and the artificial lighting is not only ample, but brilliant. There will be several pictures in this room, and also the large Tech banner, which is used at Technology reunions. Hanging from every bay is a basket filled with vines and flowers, and about the posts are blooming plants, which are changed each month by the florist who has this contract.

It is expected that, when the lunch-room opens, it will be called upon to feed about one thousand a day. As the rush is greatest at noon, preparations have been made to give the most expeditious service. Students seating themselves at tables can order of the waiters, who will serve them from the kitchen, or they can go to the lunch counter, where food will be served by an attendant as ordered, to be eaten at one of the near-by tables. The two types of service are entirely distinct, the special dishes at the lunch counter

not being the same as those served from the kitchen. The scheme of making payment is very simple, and eliminates delay. Students who are working their way through the Institute are employed as waiters. The "waiter service" hours for breakfast are 7.30 to 8.45 A.M.; lunch, from 12 M. to 1.45 P.M.; dinner, from 5.30 to 7 o'clock. By this it is to be understood that during these hours will be served special dishes suitable to the meal, but the bill of fare contains as great variety as that of a first-class hotel in a large city, and special orders will be cooked and served at any time during the day. The lunch counter is open from 8.45 in the morning until 5.30 at night. At this counter can be had all forms of dairy dishes, pastry, fruit, coffee, milk, ice-cream, and three special entrées each day. The steward, T. J. Gibney, has been steward of the Hotel Pilgrim, Plymouth, during the past season, and the chef is William McIver, who has for several seasons been chef on the Floating Hospital, and who had charge of the Tech Union lunch last year. The price charged for food are extremely reasonable, although it is of the very best quality, and generous amounts are served. Books of meal tickets, good for $3.30 worth of food, are sold for $3, and books good for $1.10 worth are sold for $1, and the aim has been so to arrange the menu that a young man obliged to economize can get good substantial food, and enough of it, for about $3.50 a week. The hours for meals on Sunday are from 8.30 to 10 for breakfast, dinner at 2, and cold supper from 6 to 7. The Sunday dinner will be served as nearly like a family table as possible. All the vegetables, with bread and butter, will be on the table, and it is hoped that the meat can be carved on the table by one of the students. If it is found feasible, this table d'hôte dinner will be added to the *à la carte* service on week-days.

SOME RECENT INVESTIGATIONS IN THE CHEMICAL DEPARTMENT

The Chemical Department of the Institute is singularly fortunate in its relations to scientific research and investigation. For a number of years there has been associated with it the Research Laboratory of Physical Chemistry, under the direction of Professor A. A. Noyes, which, while independent of the departmental organization, has co-operated with the Department in every way possible for the encouragement and promotion of the spirit of research among both students and instructing staff, the inevitable result being an increased incentive for both to keep themselves in touch with the growth and progress of the science. The work of the corps of investigators in this laboratory is well known to all whose business it is to follow the advances in the field of physical and inorganic chemistry.

A little more than two years ago steps were taken looking toward the establishment of a Research Laboratory of Applied Chemistry, which should deal with questions relating to the technical applications of chemical science. It has, fortunately, been recently possible to place this work upon a definite footing, and under the direction of Professor W. H. Walker this Research Laboratory will begin its official existence as a branch of the Department, with the opening of the present Institute year. This and the brief accounts of the work of the past two years are doubtless already familiar to the readers of the REVIEW. There is every reason to expect that this laboratory, like that of Physical Chemistry, will, through its investigation work, its advanced courses and seminars, and the attractive oppor-

tunities for research which it affords to the junior members of the instructing staff and to advanced students, add to the incentives already existing toward thoughtful and progressive activity on the part of all within its influence. It should also add to the prestige of the Institute, and bring it into closer association with the technical interests of the country.

It is not, however, the primary purpose of this paper to deal with the work of these laboratories, which have spoken and will speak for themselves, but rather to indicate, through a few examples chosen from many, the nature of some investigations carried on outside of these formally organized laboratories. Among the most important of these is the work of Professor S. P. Mulliken, who has for several years held an assistant professorship in organic chemical research, on a systematic procedure for the identification of organic compounds. The procedure employed in inorganic qualitative analysis for the identification of the metallic elements and the common inorganic acids is familiar to all who have pursued the study of chemistry beyond the elementary stages. The carbon compounds, however, do not lend themselves readily to such a simple system because of the comparative complexity of their reactions, their enormous numbers and varied characters, and the difficulties involved in establishing conditions which permit of the study of the characteristic behavior of any one compound, or even group of compounds, in the presence of the others. It is, nevertheless, a matter of importance that such compounds should be identified as easily as possible in the interests of both the scientific worker and the practising analytical or technical chemist, and it is to this formidable problem that Dr. Mulliken has devoted a large part of his energies and thought for a number of years. The first volume of a series which

he hopes to prepare was published in 1904, under the title "A Method for the Identification of Pure Organic Compounds." Since 1906 he has confined his work almost entirely to the preparation of a systematic analytical procedure for the identification of the modern commercial dyestuffs, as there seems to be at the present time no complete and trustworthy procedure extant which can be applied to the bewildering array of modern colors. A considerable amount of the work involved has been undertaken by various students as the subject of their undergraduate theses, a considerable part has been completed by private assistants, and much has been done through the almost uninterrupted labors of Dr. Mulliken himself. The results of this work will, it is hoped, be published in 1909 as Volume 3 of Dr. Mulliken's "Analytical Method" under the probable title "A Method for the Identification of the Synthetic and Natural Dyestuffs." It can hardly be questioned that this will prove to be of such permanent value to all concerned with the study and reproduction of dyestuffs, or of their color effects on textiles or other fabrics, as to justify the thoughtful, thorough, and time-consuming labor which its preparation involves.

Three years ago the Course in Chemical Engineering was thoroughly revised with a view to meeting the changed conditions and requirements now obtaining in this branch of engineering work. The broad, fundamental training in chemistry which the members of this course now obtain has made it possible to take up as subjects for investigation as undergraduate theses, problems which are typical of those existing in every chemical industry, and which require for their attack a comprehensive knowledge of both chemistry and mechanical engineering. Among the theses of this general type carried on in the Laboratory of Indus-

trial Chemistry during the last term, under the direction of Dr. W. H. Walker, may be noted the study of the soda cycle at the mill of the Champion International Paper Company at Lawrence, Mass., made by Eleazer Myers and Chesney H. Criswell of the course in Chemical Engineering.

The most important method of reducing the wood of deciduous trees, such as poplar, beech, etc., to the form of the pure cellulose fibre used in paper-making, is to boil the wood, cut into small chips, with a strong caustic soda solution in large iron digesters under a high steam pressure. The caustic of the liquor used for the purpose is purchased in the form of sodium carbonate (commercial soda ash), and is changed into the desired caustic soda by treatment with milk of lime. In the digester the caustic liquor attacks the wood, dissolving away the resins, lignins, and other encrusting materials, leaving the cellulose fibre free, being itself changed into sodium compounds of complex organic acids. When separated from the cellulose fibre, the "black liquor" is concentrated and reduced to an ash in a rotary calcining furnace, the sodium being changed back to its original form of carbonate. It is then dissolved, causticized, and used in the digester. Theoretically, therefore, there should be no loss of soda in the cycle, as there should be delivered by the rotaries as carbonate all the soda that was originally purchased and used. In practice, however, there is a constant loss of soda during the cycle of from 20 to 25 per cent. of the amount in use. The investigation in question consisted, first, in designing and constructing apparatus by which the exact amount of soda in its various forms could be determined in each step of the process; second, in measuring the loss of soda incident to each operation; and, third, in recommending such changes in equipment and practice as would reduce the loss in each part

of the cycle to a minimum. The results from the standpoint of an undergraduate thesis representing about three hundred hours of work were very satisfactory. That they were not without practical value may be seen from the following quotation from a letter of the general manager of the paper mill: "We have already commenced to take action in line with the suggestion resulting from this work, and I think we are feeling enough benefit to fully repay us any slight inconvenience it may have been to us to have them [the students] here."

A second thesis investigation which yielded interesting results was that of Messrs. H. E. Batsford and A. W. Clark on the "Influence of Temperature on Yield in the Destructive Distillation of Wood." The recent awakening which our entire country has experienced as to the necessity of more carefully utilizing our natural resources has rendered timely an investigation looking towards increasing the yield of valuable products obtained by the destructive distillation of wood. When wood is heated in the absence of air, it breaks up into a large number of compounds, the more important of which are combustible gases of varying composition, methyl or wood alcohol, acetic acid, wood-tar, and charcoal. As might be expected, the proportions of the various products vary with different kinds of wood; but to an even greater extent they depend upon the temperature to which the wood is heated and the rapidity with which the heat is applied. For the purpose of the investigation a distilling unit of the wood-distilling plant of the Avery Chemical Company at Lowell, Mass., was placed at the disposal of the students, and fitted with the apparatus necessary for measuring and controlling the temperature within the distillation retort, also for collecting and measuring the gases and for collecting and sampling the

liquid products. A large number of experimental runs were made, and the results of the observations and the tabulated analyses clearly showed that a slow, even application of heat and a relatively low maximum temperature is essential to a large yield of commercial products.

Another investigation of interest to all who patronize railroads is that conducted by Mr. R. W. G. Wint, of the Course in Chemistry, under the direction of Professor Fay, in his thesis on the study of the causes of broken steel rails. He found that an unsuspected source of danger exists in the presence of manganese sulphide in rails. It has been commonly supposed that manganese sulphide is entirely harmless, but in this work it has been demonstrated beyond a doubt that it is the source of many cracks which ultimately lead to complete fracture. In a study of crescent-shaped fractures it was found that in nearly every case the macrostructure was fine, and the microstructure indicated excellent heat treatment. In all cases, however, manganese sulphide was present, rolled out in thin threads extending in the direction of rolling. Suspicions of the brittleness of this substance were confirmed by subjecting sections of the metal to strain, and in all cases cracks were first developed in the manganese sulphide areas, and these then extended into the steel itself. The reason for the existence of manganese sulphide in the form of elongated threads was found in the fact that its freezing-point is 1162°C., which is about three hundred degrees below the temperature at which the rolling of rails begins. During this period the liquid sulphide is extended in the direction of rolling as the rolling proceeds. Below its freezing-point the sulphide is plastic, and even in this state it may also be elongated into threads with consequent danger to the life of the rail. These fa ts furnish an additional excellent argu-

ment in favor of lower rolling temperatures for rails than are often employed.

The presence of the relatively large amount of manganese sulphide found in some rails is accounted for by the desire of the manufacturer to increase his tonnage output by hastening the operations. The specific gravity of the sulphide is 3.966, while that of steel is 6.82, and, if sufficient time were given between the addition of ferromanganese and the teeming of the ingot, most of the sulphide would rise to the surface and disappear with the slag, and the metal would thus purify itself. The presence of manganese sulphide will explain many, if not all, of the crescent-shaped fractures. It will account for many rolling flaws, and, perhaps, for the split heads shown in many rails. This work, which is of great importance because of the thorough way in which the problem has been treated, will be continued with the hope of throwing additional light on a question involving not only public safety, but enormous commercial interests.

In the laboratory of food analysis considerable work has been done under the direction of Professor Woodman in the study of several important lines of food examination. The passage of the National Pure Food Act and the consequent greatly increased interest in all that pertains to food, has directed much attention toward the improvement of present methods of food analysis, both general and official. The fact that the results of chemical analysis will in many cases be brought into the courts necessitates a critical study of existing methods, and in not a few instances the development of new ones. Professor Woodman's position as associate referee on revision of the official methods, and direct connection with the practical enforcement of the pure food laws, has made it possible for the fourth-year

students in the food laboratory to undertake work which will be of immediate and practical importance in this line.

Among the problems which have been worked out may be mentioned a new method for the assay of commercial almond extract. The amount of almond oil in a pure extract is fixed by definite standard, but the methods for determining the amount present have been, for the most part, very unsatisfactory. The new method which has been developed for the examination of these extracts is accurate, rapid, and easy of execution. It can be applied also to the assay of almond oils and to pharmaceutical preparations of benzaldehyde. In connection with this work it was found possible to shorten and improve in many details the process for the preparation of specially pure alcohol, which will prove of considerable value in the examination of whiskies and lemon extracts.

Much work has also been done on coffee with special reference to the estimation of its tannin and alkaloid contents. There have appeared on the market in recent years several brands of "purified" or "refined" coffee, for which physiological virtue is claimed on the ground that they have been freed from the excess of tannin and caffein. Accurate and rapid methods for the determination of these constituents are greatly in demand. The present methods are tedious to a degree, requiring several days in order to obtain even approximate values. It has been found possible through the work in the food laboratory to shorten some of these processes, the modified method, for instance, giving results in three-quarters of an hour that formerly required seventy-two hours, and results of greater accuracy, as well. New applications of volumetric methods for alkaloidal assay to the case of caffein have brought about distinct improvement. In connection with the examination of coffee a

thorough revision of the present methods for the analysis of tea, cocoa, and chocolate, has been undertaken with the aid of the students in food analysis and other collaborators. A special study has already been made, as a part of this, of the methods for the simultaneous estimation of the sugars in milk chocolate.

Another question of importance in food work and of much chemical interest, since it is by chemical tests that the problem is to be solved, is that of the detection of artificial colors. Apart from the question whether or not these colors are injurious when used in foods, a danger which in the case of many of the coal-tar colors there is reason to believe is a positive one, their use is restricted under the provisions of the pure food laws for other reasons. These colors are often added for the purpose of simulating a higher grade article or for concealment of inferior or damaged conditions of the goods.

An example of the first use mentioned is the coloring of macaroni and other edible pastes with yellow coal-tar dyes to imitate the more valuable egg products. An example of the second application of colors is the coloring with caramel of artificial preparations of vanillin and coumarin, to imitate the true extract of vanilla. Both of those forms of coloring have been under investigation in the food laboratory with a view to devising methods for their detection, and with a considerable measure of success. The problem of detecting artificial color in macaroni is a peculiarly difficult one, and it is not as yet entirely solved, but considerable progress has been made, and it is hoped to be able to finish it. In this particular case the matter is complicated by the fact that various yellow vegetable colors, as annatto and saffron, are used, which are with difficulty distinguished from the color of egg-yellow and the lutein of wheat.

In the case of extract of vanilla a comparative study of a number of methods has shown the best procedure for the detection of caramel. The conclusions reached have been thoroughly tried out on a large number of commercial vanillas and on extracts of known purity.

Problems connected with the sanitary and commercial examination of water supplies have also been taken up by Mrs. E. H. Richards. Important among these has been a study of an adequate method of presentation of the subject of water analysis to our classes in the limited time available. The difficulties of presentation have been materially enhanced by the new questions which arise in connection with the increasing use of deep, driven wells as sources of commercial supply, and the unknown influence of these waters upon the life of conveying pipes, upon textiles and dyestuffs, and on the maintenance of boilers. The determination of the best use of available data, the most suitable means of illustrating the varieties of waters available in various localities and the precautions demanded in connection with each, and the extent of such a laboratory course of study have all been the object of careful study, from which helpful conclusions have already been reached.

The campaign against tuberculosis has given fresh impetus to the investigation of the ventilation of buildings and the quality and quantity of air which it is possible to furnish. The sanitary engineer and inspector has urgent need of portable apparatus for testing smaller variations in the composition of the air of buildings than was formerly needed, and this has been found to be a problem which is difficult of solution. The class in heating and ventilation has given considerable attention to these matters, and, as a result, in part of their work three types of apparatus have been pro-

posed for general use. These have already been described in the *Technology Quarterly*, and they will be further tested during the coming year.

These few examples of the investigations in the Department of Chemistry and Chemical Engineering have all been in progress during the last Institute year, with the exception of those of Dr. Mulliken. They have been selected because of their general interest, and no mention has been made of much equally important work of more abstractly scientific character, in organic, physical, and inorganic chemistry,—a description of which would involve too many technicalities. Nor has any reference been made to a large number of commercial problems which have been taken up by various members of the instructing staff in their private capacity as experts (since the Institute itself does no commerical work), which for obvious reasons cannot be made public. Indeed, there is hardly one of the members of the staff who has not had some definite chemical problem under investigation during the past year. An enumeration of these would be merely tiresome, and enough has, I think, been given to show that the members of the department are in close touch with the pressing problems of the day, and that through them our students are stimulated to active interest in the latest developments in their chosen science.

Free use has been made of the descriptions furnished by those in charge of the various investigations outlined above, and whatever interest the foregoing pages may possess is largely due to them.

H. P. Talbot, '85.

TECHNOLOGY'S CLUB

A club that hopes not to die in early infancy must fix upon some definite qualification for membership which shall both unite its members upon a common interest and exclude those who are not likely to sustain that interest. Congeniality is the life of a club, and the successful clubs are those in which the selective process has been happily applied.

It is a fortunate circumstance that the Massachusetts Institute of Technology makes first selection of material for the Technology Club. We all know at first hand the rigors of that selection. To be sure, any man connected at some time with the Institute is eligible for membership, but no man who has not done creditable work in Tech, either as student or instructor, cares to identify himself with the Technology Club; and the single qualification of having done creditable work in Tech makes for a fundamental congeniality among members of the Technology Club which is not seriously disturbed by differences in individual tastes. Tech men think clearly, and talk as they think; they are not only men informed, but equipped to keep themselves informed; and he is a poor stick of a Tech man who does not use his equipment. There is enough unity of interest among Tech men in general scientific and technical work to promote most profitable intercourse, and enough divergence of individual interests to discourage shop talk. To the privilege of drawing its membership from this body of six thousand picked men the Technology Club owes, primarily, the success it has attained. Its steady growth from a handful of members twelve years ago to a present membership of

more than seven hundred has made for it an enduring place among Technology institutions.

The Technology Club aims not only to give its members a club-house with pleasant lounging-rooms, cuisine, billiards, sleeping-rooms, smoke talks, and good companionship; its broader object is to interest itself in Technology affairs and promote the welfare of the Institute. The club-house is the official home of THE TECHNOLOGY REVIEW. The Association of Class Secretaries, the Walker Club, the Instructors' Club, and other Institute organizations hold their meetings there. It entertains the guests of the Society of Arts, and many class dinners are held in its dining-room. The Club was a centre of activity for the raising of the Walker Memorial Fund and the Technology Fund, and freely lends itself to all such good causes in the interest of the Institute. It is the rendezvous of many who gather to discuss Institute affairs, and a large number of members of the faculty and corporation are on its list of members. A register is kept at the club-house for the benefit of all visiting Tech men, whether members or not, and they are cordially invited to register their permanent and temporary addresses for the benefit of their friends. The Club maintains intimate relations with all Technology organizations throughout the country. In short, the Technology Club aims to be Technology's Club,—a centre of activity for all who wish to maintain an appreciative, working interest in Institute affairs.

The Technology Club is in no sense a students' club, although it recognizes the expediency of having a live connection with the source of its future supply—the undergraduates—by admitting as members a limited number from the Senior Class, Juniors in their last half-year, and graduate students. The admission of these members of the student body does not signify that the club is assuming any of the

functions of the Tech Union or of the various student organizations, but rather that certain of the students have attained to a degree of wisdom and discretion which makes them welcome among the older Tech men. The mutual appreciation of this feature is attested by the fact that the contemplated undergraduate limit of sixty has been tacitly ignored by the Council, and ninety-four students are now enrolled as members. The Technology Club, however, holds strictly to its sphere of activity among Tech men who are beyond their student days, and a merger of the Club with any student organization would be as absurd as a merger of one of the research departments with first-year chemistry.

It has been frequently proposed that the membership of the Technology Club be limited. Six hundred was at one time suggested as the proper number. This does not seem to be in harmony with the main object of the Club. A fortunate change in house management, made a year ago, which has contributed to the recent marked increase in the Club's income, popularity, and a rise in membership to a point way beyond the proposed limit, has demonstrated the unwisdom of any limit. The Club should never be the exclusive club of a convenient number. To fulfil its mission, the Technology Club should need new members as long as there are Technology men who are not members.

The Technology Club cordially invites all Tech men to become members, and more especially it invites participation in its affairs. The Club has never been afflicted with officers so content with their own results that they have not eagerly sought intelligent advice and suggestions, though its best interests have been threatened at times by the well-intentioned efforts of members whose infrequent visits to the Club and meagre knowledge of its activities did not

qualify them as arbiters of its destiny. A man can do his work best by getting next to it.

In membership, in income, and in useful activity the Technology Club is now at the high-water mark of its history. To those who have worked for it, and stood by it through the years of its growth, this merely spells *opportunity* for more growth and greater usefulness,—opportunity for strong Tech men who have made their way in the world to turn some of their efforts to Technology's account, and make the Technology Club, in an always broadening sense, Technology's Club.

SETH K. HUMPHREY.

PROPOSED CHANGES IN ALUMNI ORGANIZATION

The last annual business meeting of the Alumni Association, held Jan. 10, 1908, at Hotel Brunswick, was called to order at 6.20 P.M. At 6.50 P.M. it adjourned. In the intervening thirty minutes the records of the previous meeting were approved, reports were read and accepted from six committees, and several votes were passed. This procedure was typical of recent practice.

The annual meeting presents no opportunity for general discussion. In effect, at least, it is discouraged, in order that the business may be completed before the appointed time for dinner. The attendance has scarcely increased during the last eight or ten years, while membership in the Association has practically doubled. To-day its business is transacted by less than two per cent. of its members, who are largely residents of Boston and vicinity. Up to 1905 attending members also elected all of the officers.

That the best interests of the Association cannot be conserved by present methods of conducting business must be evident. Experience indicates that conditions cannot be permanently bettered by holding the business meeting on a different date from the social gathering.

The time seems ripe, on the eve of another reunion, for such changes in the organization of the Alumni Association as shall provide more opportunity for deliberation on matters of policy and shall make the meetings more representative.

The solution of the problem appears to lie in the creation of a practical working body which shall meet with reasonable frequency and shall act for the Association. Such an organization, in which a fair proportion of the members is elected at large and the balance represents certain groups or organizations, seems to fulfil the conditions. A body so constituted would be directly answerable through its individual members to the organizations which they represent, and as a whole to the Association at large.

Believing in the advantages of such a form of organization, the Executive Committee outlined a plan which for several months past has been the subject of analysis and criticism at the hands of the Association of Class Secretaries and of a joint committee, including three members appointed by that organization. Profiting by this helpful but unofficial discussion, the Executive Committee, after making its own final revision, will soon present the same to the members of the Alumni Association for approval by letter ballot. This will, undoubtedly, be done in time to permit the changes to become operative at the beginning of next year.

The central feature of the proposed new form of organization is a council. As now planned, this would be composed of several recent ex-presidents, a specified number of members elected at large, and one representative from each graduate class and each approved local alumni organization. A president, two vice-presidents, a secretary, and a treasurer, elected by the Association, would be *ex-officio* members of the Council, and with four members elected by the Council would constitute the Executive Committee, which would act for both bodies. The elected officers would also serve as the officers of the Council. To the present powers and duties of the Executive Committee would be added those of approval for enrolment and representation of local alumni organizations, and of approval or veto of by-laws formulated by the Council.

Pending the selection of a representative by each organization, its secretary would be recognized as its representative. Upon request of a specified number of Association members the Council would be required to consider matters pertaining to the general welfare of the Association, to make recommendations thereon, and to poll the Association by letter ballot.

Under the provisions outlined above it is evident that the work of the Council would be largely deliberative; that the Executive Committee, a majority of whose members are elected by the Association, would be given specific powers; that there would be such diversity of representation as to give the Council a proper balance of permanency and change in membership; that distant members, though unable to attend, would have full rights and privileges, and

would be kept informed; and that, with reasonable frequency of meetings and the acquaintance of members with each other and the work, matters of large importance to the Association could be handled wisely and well.

Almost by force of circumstances the Association of Class Secretaries has usurped in part or in full many of the proper functions of the Alumni Association. Among them may be included the publication of THE TECHNOLOGY REVIEW, the organization of local Technology Clubs, the promotion of the last reunion, and the conduct of the Commencement Celebrations and the Pop Concerts. The results, although obtained by much duplication of effort, appear to have warranted such independence of action.

But it is now time that the Alumni Association should assume these and other functions which pertain to it. The new constitution will make this possible. The Council, an authoritative body, would be a worthy successor to the Association of Class Secretaries, a body without authority. The latter might still preserve its identity and devote itself to the work for which it was originally organized, being free on occasion to express its independent opinion upon matters pertaining to the Institute.

Already the necessary steps have been taken for transferring the publication of the REVIEW from the class secretaries and making it the official organ of the Alumni Association. It is proposed that its subscription price be raised to two dollars, and that the dues be increased to the same amount, but that the payment of dues shall entitle a member to receive the REVIEW without extra charge.

Such, in brief, are the essential features which will probably be embodied in the new constitution and by-laws. They are here outlined, though unofficially, in order that the alumni may be better prepared to act when they are formally presented.

STEAM TURBINE ENGINEERING

Instruction in Steam Turbine Engineering at the Institute has kept abreast of the development of the art ever since its important applications in manufacturing and transportation have been recognized, and within a year two things have been accomplished which have placed the work on a very satisfactory basis.

(1) Professor Peabody's "Thermodynamics of the Steam Engine" has been rewritten, and includes a chapter which places the computations for the steam turbine on the same plane as for all other heat engines. At the same time his Tables of the Properties of Steam have been recomputed, and there has been added a table of temperature and entropies which enables all the required problems to be solved with ease and precision. (2) There is now erected in the Engineering Laboratories of the Institute a 500 kilowatt Westinghouse-Parsons turbine, with absorption brake, condenser, and wet and dry air-pumps, and other facilities for testing.

In the installation of a turbine of such power the Institute has adhered to its established custom of making experiments on such a scale that results shall be of real value, and we shall soon have at hand such complete information as is now to be found only in the hands of turbine builders, and which they have consistently declined to give out.

Attention has already been directed in the REVIEW and the *Quarterly* to important tests which have been made by the Department of Naval Architecture on turbine steamers and that the department has a Denny-Johnson Torsion-meter which can conveniently be used for such work on any steamers that may be available.

In the days of wooden ships the distinction between the ship-carpenter and the engine-builder was sufficiently evident, but now the division of work between the ship-builder and the engineer is partly traditional and partly a matter of convenience. The naval architect is expected to determine the power required to drive the

ship, and the engine designer is expected to furnish an engine that will develop that power,—just as though either could work intelligently without knowing in advance what the other would do! When the limit of possibilities is approached, as in torpedo boats and turbine steamers, it is at once evident that the team must control the whole problem. For this reason our students of naval architecture have always been given thorough instruction in marine engineering, and the option in Marine Engineering for Course XI. has always dealt with the problems of power and speed of ships.

In the development of the course in naval architecture it has been found possible to so adjust the work in ship and engine design as to give proper attention to the application of steam turbines to ship propulsion, but it is neither possible nor desirable to increase the time given to the options in Mechanical Engineering. The proper course of action has appeared to be to introduce a new option in Steam Turbine Engineering parallel with the established options of that course. All students of that course will, as before, though with better opportunity, be given such instruction in the theory of steam turbines as all engineers should have in order to understand those machines and apply them intelligently. A few of the men who may expect to take up work with turbine builders or who for any reason are interested in the subject will take up special instruction in turbines, including design of turbines for various purposes.

The new option in Steam Turbine Engineering will be in the hands of Professor Peabody, assisted by Mr. H. A. Everett, Instructor in Marine Engineering, and by Mr. L. H. Sutton, of the Class of 1908. The option thus starts off modestly with the addition to the teaching staff of one assistant; but this comes naturally from the fact that there is an economy of effort in placing the option in the hands of those who have had and will necessarily have control of the instruction in the application of the steam turbine to marine propulsion.

SUMMER SCHOOL OF INDUSTRIAL CHEMISTRY

The regular Biennial Summer School of Industrial Chemistry for the year 1908 was held June 10 to 27, and consisted of visits of inspection to manufacturing establishments in the neighborhood of New York and at various points in New Jersey and Pennsylvania, the trip extending as far as Pittsburg. As in previous years, our reception in nearly every case was very cordial, the fullest opportunity for observation and inquiry being afforded. In all, twenty-six plants were visited, in the following order: Standard Sugar Refinery, South Boston, Mass., where the numerous details incidental to the preparation of granulated sugar from the various grades of crude raw sugars were fully explained. At the Manhattan Rubber Company, Passaic, N.J., was seen the making of mechanical rubber goods, such as fire and garden hose, belting, packing, paper-mill rolls, mats, tiles, etc. An instructive talk upon the different kinds of crude rubber was given here by the chemist. Colgate & Co., Jersey City, N.J., showed the process of soap-making and recovery of glycerin from the spent lyes; also the making of toilet soaps, talcum and sachet powders, and toilet preparations. At the Tide Water Oil Company, Bayonne, N.J., petroleum refining was studied. The crude oil received by pipe-line from Pennsylvania is distilled by a continuous process, to yield some seven or eight fractions, each of which is further purified to produce various commercial grades of oil. Lubricators and paraffin wax are also produced here, and one of the most interesting sights was the view of the enormous filter-presses, with five hundred cells, forty-eight inches in diameter, for collecting the crude scale wax; also the barrel factory and automatic can-making machines. Twenty-five acres of white-oak woodland are cleared daily to supply the staves for the barrels. At the Murphy Varnish Company, Newark, N.J., a descriptive lecture upon resins and varnish-making by Mr. Franklin Murphy preceded the inspection of the works. The remarkable

cleanliness of the entire plant, and the great care exercised in selection and treatment of the raw materials, are very striking.

At the Bergenport Chemical Works, Bayonne, N.J., was seen the manufacture of sulphuric acid by the chamber process, followed by concentration of the weak acid in platinum and cast-iron stills. The Nichols Copper Company, Laurel Hill, L.I., showed the reduction of copper from the ores and its refining. The works of the J. T. Baker Chemical Company, Phillipsburg, N.J., showed the manufacture of chemically pure salts and acids. Numerous ingenious devices and apparatus were here brought to the attention of the class. At the great plant of the Bethlehem Steel Company, South Bethlehem, Pa., were seen iron blast-furnaces and open-hearth steel-making; also the manufacture of ordnance, including 12-inch guns. The plant of the Lehigh Portland Cement Company, Ormrod, Pa., showed the making of cement from shale and limestone. The rotary kilns and extensive grinding outfit were points of much interest. The day spent at Kane, Pa., was one of the especially pleasant experiences of the trip. On arrival the party was met by a reception committee, and later were conducted to the various factories by officers of the companies. The American Plate Glass Company, James City, Pa., was visited under the personal guidance of Mr. E. B. James, vice-president of the company, who also furnished a special train on the Kane & Elk Railroad to convey the party to James City. Next a stop was made at the wood distillation plant of the James Manufacturing Company, where the making of charcoal, wood alcohol, and acetate of lime, was studied. At the Pennsylvania Window Glass Company, under the guidance of Mr. E. H. Kemp, treasurer of the company, the very interesting processes of blowing cylinders, opening and flattening the sheets of glass, were seen. The remarkable dexterity of the blowers in manipulating the large masses of soft glass is a continual source of interest.

Opportunity was also afforded to see the Owens bottle-blowing machine in operation, turning out standard quart milk bottles at the rate of eight per minute. Five men (unskilled labor) can tend two of these machines. The American Acid and Alkali Company,

Bradford, Pa., has the largest plant in this country for the manufacture of oxalic acid from saw-dust. Pending certain changes in progress, the plant was not in operation at the time of the visit, but excellent opportunity was afforded to inspect the very modern equipment and get details of the process. Here was also seen the operation of drilling an oil well.

The Atlantic Refining Company (Eclipse Works), Franklin, Pa., is an extensive plant where the various operations of petroleum distillation were again studied; also the recovery of the spent acid from the refining, and its reconcentration to high strength in cast-iron and glass stills. The Testing Laboratory of the Galena Signal Oil Company here, in charge of Dr. P. Conradson, was also opened for inspection, and several very interesting appliances were exhibited. The Colburn Machine Company at Franklin permitted an inspection of their new machine for the automatic making of window glass, by drawing the soft glass directly in flat sheets. Although still in the development stage, his machine will doubtless exert considerable influence on the present methods of making window glass. At the Macbeth-Evans Glass Company, Charleroi, Pa., a diversified series of glass-blowing and working operations were observed. The making of glass pots, the production of lenses for signal lanterns, the making of silvered reflectors and mirrors, pressed ware, cut ware, and the artistic decoration of shades, globes, and lamp chimneys, were all found most interesting.

The National Tube Works, McKeesport, Pa., besides showing the usual blast-furnace and open-hearth processes, gave the first view of the Bessemer process in operation. Here the making of lap and butt welded tubes was seen in detail. The Harbison-Walker Refractories Company, Hays Station, Pa., produces fire-brick and basic and acid furnace linings of various kinds. Both circular and rectangular kilns are used, and the methods of indicating and controlling the temperature were most interesting. At the H. J. Heinz Company, Pittsburg, a thoroughly organized establishment of much interest was seen. Food products, preserves, sauces, relishes, etc., are there prepared with scientific attention to cleanliness and purity. The National Lead and Oil Company, Pittsburg,

make linseed oil, white lead, by the Dutch process, red lead and litharge. All of these processes had much interest, both chemically and from the mechanical point of view.

The Crucible Steel Company, Pittsburg, make puddled iron for muck bars, which are then converted to steel by the cementation process or made into crucible steel of special kinds by melting, with the addition of suitable ingredients, in crucibles holding one hundred pounds each. The drawing and annealing of wire and drill rods was fully shown and described. The Carnegie Steel Company, Duquesne, Pa., furnished opportunity to inspect the making of merchant bar and structural material in a very large way.

The plant of the American Sheet and Tin Plate Company, Vandergrift, Pa., was the last place visited, and proved to be one of the most interesting. Here was seen the rolling of thin plate and sheet iron, with all the necessary annealing and pickling operations. Galvanizing and making of corrugated sheets is done in machines of the latest labor-saving type.

A modified form of chamber process for sulphuric acid making was here seen. The system was supplied with concentrated sulphur dioxide gas from an automatic brimstone burner of the agitating type. This entire plant was one of the cleanest and best cared for of any visited on the trip.

The party was made up of nineteen students, seven from Course V., one from Course VIII., and eleven from Course X., most of them being members of the class of 1908. Two of these dropped out during the trip, but the rest kept together until the last day. Accompanying the party were Professor F. H. Thorp, who arranged the details and had charge of the instruction, Mr. John F. Norton from the Industrial Chemical Laboratory, and, for a part of the time, Professor Talbot. Attendance upon the trip was voluntary, and each member met his own expenses. The estimated cost of the trip, including return to Boston, was $75, and it is believed that the legitimate expenses incurred have not exceeded that amount.

Many evenings and several afternoons were devoted to conferences and discussions of the industries visited, in order that the men

might fill out their notes and gain a fuller understanding of the processes and appliances which had been seen. It is expected that before October 15 the members of the party will submit detailed reports on all plants visited, from which selections will be made, to be placed on file in the Chemical Library.

At several places special courtesies were tendered. At the Tide Water Oil Company the party was entertained at dinner, and at the H. J. Heinz Company a light lunch was served, and souvenirs of the visit presented to each. The Manhattan Rubber Company, the American Plate Glass Company, and the Atlantic Refining Company provided special transportation for the party. The Harbison-Walker Company presented fine leather-bound copies of their catalogue, containing information relative to the use and properties of their products; and at several other places samples of materials and products were given us.

In the course of the trip several former Institute students were met in the works which were visited At the Manhattan Rubber Company, Mr. A. T. Townsend, Mechanic Arts, '84 (president of the company), and Mr. B. M. Mitchell, '93; at Colgate & Co., Mr. G. M. Green, '03; at Bergenport Chemical Works, Mr. Charles E. Baldwin, '00; at American Acid and Alkali Company, Mr. E. C. Emery, '98; at National Tube Works, Mr. Charles C. Briggs, '00; at Carnegie Steel Co., Mr. F. W. Coburn, '01, and Mr. F. H. Wilcox, '06. To the aid and interest of these gentlemen much of the success and pleasure of the visits is due, and the spirit of fraternity and comradeship was awakened between the students and the older men. This is one of the useful results of these tours. A rather noticeable incident in making the arrangements preliminary to the trip was the unusually large proportion of places where application was made to which visiting permits were granted, over 80 per cent. of the replies being favorable.

Besides the formal inspection of works, which was the main object of the trip, there was considerable opportunity for sight-seeing and pleasure trips during the tour, notably in the vicinity of New York and Pittsburg, at Allentown, Bradford, Rock City, and Franklin. The journey from Allentown to Kane and Franklin traverses some

of the most picturesque parts of Pennsylvania, affording good views of the anthracite coal and oil regions of that State. Throughout the time good weather was the rule, and the members of the party will look back upon the trip as a most enjoyable experience and one which will be long remembered.

FRANK H. THORP.

MINING SUMMER SCHOOL

The Summer School in Mining Engineering and Metallurgy was held in Nova Scotia during the month of June. A party of four, consisting of Professor Locke, Mr. Reed, Mr. Bartlett, and Mr. Beckman, left for Yarmouth Tuesday afternoon, June 9, by boat. At Yarmouth the train was taken over the Dominion Atlantic Railway, which brought the party to Middleton Wednesday afternoon, June 10. Twenty-four hours were spent here, visiting the iron mines of the Londonderry Iron Mining Company at Torbrook.

The next jump took the party by rail to Kingsport, and thence, by steamer on the Bay of Fundy, to Parrsboro. The object here was a trip by motor boat to Cape Blomidon to search for fossils and to study geology.

Saturday, June 13, was the date of leaving Parrsboro and arriving at Spring Hill, where visits were made to the coal mines and the surface plants connected therewith.

Sunday was spent very quietly in Spring Hill. This day marked the culmination of three days' rain.

Monday, the 15th, was spent in travelling to Joggins. Although only a short distance, it required about five hours and involved two changes by railroad. The last part of the trip over the mining road will be long remembered by the party. At Joggins Mr. Barnhill, a former student of the Institute, spent half a day with the party, showing the wonderful geological section along the shore. Visits were also made to the new shaft workings in the coal mine, and a study made of the new surface plant in process of erection.

Tuesday, June 16, the party left Joggins to go to New Glasgow. *En route* a side trip was made to Chignecto to see a new power plant, developing electricity from low-grade coal at the mine and supplying it for power purposes at Amherst. Two days were spent in New Glasgow, and the following works visited: the rolling

mill of the Nova Scotia Steel & Coal Company; the new Allan shafts of the Acadia Coal Company; the Government Diamond Drill prospecting outfit at work upon the coal mines of the Acadia Company; the machine shop of the Sutherland Rifle Sight Company, where extreme accuracy is required in machining the parts of this device.

Thursday, June 18, was spent in travelling to Antigonish, and thence by stage 60 miles to Isaacs Harbor, where the arrival was made shortly after midnight. No one was up in the hotel, and the driver told the party to take any rooms that they could find empty. He reported that it was the custom of the landlord to get out in the morning and count the number of hats in the front hall and get breakfast for that number. A stop was made here until Tuesday night, June 22. A complete study was made of the underground workings and the surface plant of the gold mine of the Boston-Richardson Mining Company. It was a delightful experience, and the members of the party were sorry to leave. The stage trip was repeated back to Antigonish, and a long jump by rail was made to Sydney, where a stop of a week was made. The party saw the mines and surface plants of the Dominion Coal Company at Glace Bay, the blast furnaces, Bessemer converters, open-hearth furnaces, rail mill, rod mill, sulphuric acid plant, coke ovens, and gas plant of the Dominion Iron & Steel Company at Sydney, and the mine and surface works of the Nova Scotia Steel and Coal Company at North Sydney. At Glace Bay two members of the present Junior Class were met. They were spending the summer in practical work underground.

The party broke up on Tuesday, June 30. Professor Locke made a visit to the gold mine of the Great Bras d'Or Mining Company, thirty miles north of Baddeck, where he found two members of the class of '08, Tse and Hammond, at work for the summer, and thence returned to Boston. Mr. Reed stopped over a few days to visit Mr. R. F. Dimock, his classmate, who is connected with the Dominion Iron & Steel Company. Messrs. Bartlett and Beckman returned to Boston direct, stopping over one day in Halifax.

The party was small this year, but this in itself was a great ad-

vantage because the members could see everything fully. A cordial reception met the men at every point, and it is their desire to be put on record as appreciating the many courtesies which they received at the hands of the managers and superintendents in all the places visited.

C. E. Locke.

THE ALL-TECHNOLOGY REUNION

The Second Tech Reunion will be held next June, and a meeting of the Association of Class Secretaries and the Executive Committee of the Alumni Association will be held early in October to discuss the main features of the celebration and appoint a committee to take charge of the arrangements. The interest that is being shown in the Second Tech Reunion among all the classes insures the greatest convocation of Tech men ever assembled, and the programme will be fully in keeping with the importance of the occasion.

The general plans will be settled in a few weeks, and it is suggested that the various alumni associations make the reunion a special order for their annual meetings this winter. The next number of the Review will announce the plans of the committee, and secretaries of classes and alumni associations will be notified of the details as soon as they have been decided upon.

STATISTICS OF REGISTRATION 1908

The following table gives a comparison of students registering on the first day of the school year for five years, including 1908:—

	First Day.	*End of First Week.*	*Catalogue Number.*
1904	1422	1546	1561
1905	1283	1429	1466
1906	1150	1373	1397
1907	1226	1390	1415
1908	1224		

College men last year, 155. College men this year, 159.

TECH MEN IN THE PUBLIC EYE

CARLETON A. READ ('91) has been appointed professor of steam engineering at the Worcester Polytechnic Institute, and assumed his duties in September. Professor Read goes to Worcester from the New Hampshire State College, where he was professor of mechanical engineering. He was born at Hanover, Mass., in 1868, and was graduated from the Massachusetts Institute of Technology with the class of '91. He was an instructor at the Institute when he was called to the chair of mechanical engineering at the State College, Durham, N.H.

SAMUEL M. FELTON ('73) in a recent newspaper interview says: "The opportunities to-day for a young man to succeed and work his way up in the railroad service are just as good as they ever have been, provided he devotes his entire time and attention to the interests of his company." "There have been many times," continued Mr. Felton, "when to become the head of a great system, or to have a seat in the councils of its directorate, depended more upon other influences than that of actual ability or knowledge of the business, but this has diminished of late years, and the man who succeeds to these positions now does so on the ladder of toil. The growing thousands of miles of railroad construction afford many more of these positions worth working for, and the positions are being given to the men who are capable rather than to favorites knowing nothing of the business." Mr. Felton was born in Philadelphia on Feb. 3, 1853, and entered the railroad service at the age of fifteen. He became a rodman on the Chester Creek road in 1870, and worked through 1871 as leveller and assistant engineer of the Lancaster road. He then entered the Junior Class of the Massachusetts Institute of Technology. In the summer of 1872 he was engineer in charge of the surveys of the Chester & Paoli road. Then, being graduated in 1873 as civil engineer, he became chief engineer of the Chester & Delaware River road, and later general

superintendent of the Pittsburg, Cincinnati, & St. Louis road. In 1882 he was general manager of the New York & New England road, remaining there two years, when for a short time he was assistant to the president of the New York, Lake Erie & Western, later becoming vice-president of the New York, Lake Erie & Western, in charge of the traffic department. In 1885 he was first vice-president of the Erie, in charge of the traffic and operating departments. From 1890 to 1892 he was vice-president of the East Tennessee, Virginia & Georgia road and Louisville Southern. From 1890 to 1899 he was president and then receiver of the Cincinnati, New Orleans & Texas Pacific, and President of the Alabama Great Southern Railroad. From 1899 to 1908 he was president of the Chicago & Alton, when he was called to the presidency of the Mexican Central Railroad, which office he now holds. Mr. Felton is a member of the Corporation of the Institute.

BERNARD VONNEGUT ('76), architect, of the firm of Vonnegut & Bohn, died at his home in Indianapolis, Ind., August 7. Mr. Vonnegut was a special student in architecture at the Institute of Technology, and took a finishing course at the Polytechnic Institute of Hanover, Germany. In 1888 he joined Mr. Bohn in business, and has been the architect for some important buildings in the State of Indiana. He was highly esteemed for his straightforward honesty and open business methods. He was a member of the Architectural League of New York and of the American Institute of Architects. One of his sons, Kurt, was graduated with the class of 1908.

M. FRANCIS OLIVER ('97) has recently been appointed deputy State architect of New York by State Architect Ware. Governor Hughes signed the bill creating the office some weeks ago, but the selection has just been made, after a thorough search for the most efficient man. The salary is $5,000 a year. Mr. Oliver was born at Annapolis, and took a special course at the Institute with the class of 1897. He was connected with the firm of Butler, Rodman & Oliver of New York, and has been engaged in private practice in New York and Concord, N.H.

HIRAM P. MAXIM ('86) is the inventor of the new noiseless firearm, which is attracting much attention in army circles. In discharging the weapon invented by Mr. Maxim, the only sounds heard are the click of the hammer and the thud of the bullet, and the inventor contends that this insidious weapon will be a very potent factor in establishing universal peace. The silencing device consists of a series of aluminum cells that automatically cut off the powder gases from sudden escape after the bullet has passed from the rifle barrel. These gases escape slowly without making noise. Experiments have been made with it recently by the American Society for the Prevention of Cruelty to Animals, who are seeking to find a slaughtering weapon that will kill in a humane manner. Heretofore firearms have been impossible on account of the loud report. In a recent interview Mr. Maxim says: "In making a silent rifle for the army, many difficulties will have to be overcome that are not met in this slaughter gun. In this gun only the report has to be overcome, but in an army weapon I must start further back, and first overcome the sound of the falling hammer." Mr. Maxim was born in Brooklyn thirty-nine years ago, and was a special student in the class of '86. He has recently been interested in the automobile business at Hartford, Conn.

CHARLES R. RICHARDS ('85), who has been director of the Manual Training Department, Teachers' College, Columbia University, has resigned to accept the position of director of Cooper Union, New York City. Mr. Richards assumes this important position well equipped for the problems that he will face. He was born in Boston in 1865, educated in the public schools, and was graduated from the Institute with the class of 1885. After his graduation he became assistant superintendent of the Whittier Machine Company, and in 1888 he organized the Department of Science and Technology at the Pratt Institute, Brooklyn, remaining in charge until 1898. He then became director of the Manual Training Department, Teachers' College, Columbia University, and has risen to eminence as a teacher and writer in the field of industrial education. Professor Richards started the movement that led to the successful organiza-

tion of the National Society for the Promotion of Industrial Education, and was secretary of the society from 1906 to 1908. He is a member of the American Society of Mechanical Engineers, the Society for the Promotion of Engineering Education, the Eastern Manual Training Association, the Eastern Art Teachers' Association, is a trustee of the Children's Aid Society of New York, and a special Investigator, Department of Labor, of the State of New York. The trustees of the Cooper Union are John E. Parsons, R. Fulton Cutting, Andrew Carnegie, Peter Cooper Hewitt, and George L. Rives.

PROFESSOR GEORGE F. SWAIN, of the Institute, and F. H. NEWELL ('85), director of the Reclamation Service, have been reappointed members of the Waterways Commission by President Roosevelt, in order to insure the continuance of the commission, for which Congress failed to provide. Professor Swain has also been appointed, by Governor Guild, a member of the State Conservation Commission to act in co-operation with the national organization.

FRED MORRILL ('07) has gone to China to begin his duties as instructor at the Imperial University at Tientsin. He will teach Chinese students railroad engineering in English, there being a corps of English instructors at the university.

ARTHUR D. DEAN ('95) has been appointed chief of the division of trade schools in the New York State Education Department by Commissioner A. S. Draper. Since 1906 Mr. Dean has been supervisor of Industrial Education in the Young Men's Christian Associations of Massachusetts and Rhode Island, and for the past three summers has been in charge of the department for the training of teachers for industrial education in the Cornell University Summer School.

CLARENCE D. HOWE ('07), of Waltham, has recently been appointed professor in civil engineering at Dalhousie University, Halifax, N.S. Mr. Howe took a post-graduate course at Technology, serving at the same time as civil engineering instructor in the same department.

WALTER B. RUSSELL ('97) has been appointed director of the Franklin Union, Boston. In 1791 Benjamin Franklin bequeathed money to the city, a portion of which was to be available, after a certain amount had accumulated, to give young men an opportunity to learn a trade. Andrew Carnegie has made a large addition to the Franklin bequest, and a substantial and attractive building for the Franklin Union has been erected on Berkeley Street at the corner of Appleton. Mr. Russell, who takes this important position, was graduated from the Institute in the course of mechanical engineering. For three years he was assistant at the Institute, and in 1900 was appointed an instructor at the Pratt Institute, Brooklyn, N.Y., in the Department of Science and Technology, afterwards taking charge of the courses in drawing, strength of materials, steam engineering, and mechanics. In 1906 he resigned to take charge of the educational system of the New York Central lines. This railroad has now ten classes which have been developed by Mr. Russell, both for apprentices in the shops and for mechanics and foremen in the evening.

ISAIAH S. P. WEEKS ('71) died at Lincoln, Neb., in September. Mr. Weeks has been a prominent figure among railroad builders of the West. He was born at Nantucket, May 8, 1847, and after being graduated with the class of '71 he went to Nebraska to take a position with the Burlington road, remaining in its employ until 1874, when he became division engineer of the Northern Pacific. In 1885 he returned to the Burlington to serve as chief engineer of the lines west of the Missouri River, in which office he remained until his death. Mr. Weeks added about 3,000 miles to the Burlington system, nearly one-third of these additions being built between the years 1886 and 1887. Mr. Weeks was married to Sarah Curtis Thayer, Dec. 30, 1873, who survives him with three children. One of them, Paul Weeks, a mechanical engineer, with the Baldwin Locomotive Works in Philadelphia, was graduated from the Institute with the class of 1902.

FRANK E. ALDEN ('79) died at his summer home at Edgartown, Mass., September 16. Mr. Alden was born near Boston forty-

nine years ago, and took a special course in architecture at the Institute. He entered the offices of Henry L. Richardson, and had charge of the construction of the New York State Capitol at Albany. In 1888 he formed a partnership with Longfellow and Harlow of Boston, with offices in Boston and Pittsburg. The firm became Alden & Harlow in 1895. As a member of the firm, Mr. Alden's name was identified with building the Carnegie Library at Pittsburg, as well as some most important buildings in western Pennsylvania.

JAMES P. MUNROE, '82, has contributed a timely article to the *Atlantic Monthly* for September, entitled "The Heart of the United States." Speaking of the development of the resources of Massachusetts, he says:—

"There are, however, more specific and important things for Massachusetts to learn from Illinois. She ought, above all, to adopt the well-considered plan—almost magical in its effects—of scientifically exploiting her resources, and teaching her farmers, merchants, manufacturers, importers, and exporters what the State is capable of doing. It is a trite saying that only a few of the possibilities of a human being are developed in the ordinary course of a man's or woman's life. It is still more true, however, that but the merest beginning has been made in the development of the resources of Massachusetts or of any other State of the Union. . . .

"For such a development of her resources, the commonwealth needs to study and heed the example of the Middle West: that of educating her citizens in the fundamental principles of production and distribution, and in the application of those principles to the requirements of modern life. The world to-day is a world of applied science; and the line of development to be followed—especially in such states as Massachusetts—is that of the application of science to agriculture, to manufacturing, to commerce, to transportation, and, not least, to education. The states of the Middle West—many of them daughters of Massachusetts—have clearly pointed out the way; it is for Massachusetts to profit by their example and to recover, in leadership along these modern lines, the

educational prestige which, in the ancient and now outworn paths of learning, she for so many years maintained."

ARTHUR D. LITTLE, '85, was elected chairman of the newly organized Division of Industrial Chemists and Chemical Engineers at the summer meeting of the American Chemical Society at New Haven. It is believed that the organization of this new division will have an important influence on the development of technical chemistry in this country, and that it will serve especially to bring the society into closer and more effective touch with industrial enterprise and effort. As a beginning in this direction, the division will shortly commence the publication of the *Journal of Industrial and Engineering Chemistry*, for which an especially strong board of editors has been selected.

Mr. Little entered the Institute in 1885, and took a special course of chemistry for three years. His early work was concerned with the development of the sulphite process for the manufacture of wood pulp. He has since been closely identified with the paper industry. His professional work has been chiefly along the development of processes for the chrome tanning of leather, the electrolytic preparation of chlorates, and the chemistry of cellulose. He has been for some years at the head of a large organization engaged in the practice of engineering chemistry in Boston. He is official chemist of the American Paper and Pulp Association.

GEORGE E. HALE, '90, director of the Solar Observatory of the Carnegie Institution, has been elected a foreign correspondent of the Paris Academy of Sciences in the place of the late Asaph Hall.

GENERAL INSTITUTE NEWS

SOCIETY OF ARTS

Owing to the fact that the publication of the research work done at the Institute is now adequately provided for in other ways, the Executive Committee of the Corporation has voted to discontinue the publication of the *Quarterly* after the December issue. The Proceedings of the Society of Arts will be published separately, and will be sent to all members of the society.

ELECTRICAL ENGINEERING

The War Department has detailed Captain C. C. Carter (West Point, '99) to spend the coming year at the Institute for the purpose of studying electrical engineering. Captain Carter belongs to the Coast Artillery, and for several years has been an instructor in the Artillery School at Fort Monroe and in the School of Sub-marine Defence at Fort Totten, besides serving on the United States Artillery Board and the United States Torpedo Board. It is now planned to carry on a more advanced course of instruction to officers in the school at Fort Monroe, and Captain Carter has been detailed to study for the coming year for the purpose of preparing himself to give instruction in this advanced course, which will include a considerable assignment of electrical engineering and related branches.

Mr. W. V. Lyon's (Instructor in Electrical Engineering) book of Electrical Problems will be issued from the press in a short time.

MECHANICAL ENGINEERING

To the space heretofore occupied by the Engineering Laboratories has been added a portion of that formerly occupied by the lunch-room, which measures about 54 by 37 feet, or about 2,000 square feet. Approximately one-half of this space is occupied by the new Westinghouse Parsons Steam Turbine and the auxiliary apparatus.

The turbine has a capacity of 500 kw., and has three diameters of rotor. It is installed in such a manner that either saturated or superheated steam may be used, the superheater having a capacity of 10,000 pounds of steam per hour at a pressure of 250 pounds per square inch, superheated 250 degrees Fahrenheit.

The turbine is set on an I beam foundation, thus leaving the space beneath it open.

The floor of the room is of cinder concrete, five inches thick. This floor has been stiffened at the points where the load is applied by I beams, resting on piers built in the sub-basement. The bottom of the turbine bed is set even with the floor, hence the floor plates are about 16 inches above the floor, and thus all the small piping and connections underneath are exposed.

The condenser is one of the latest designs of the Alberger Company, with steam entering at the bottom, and with hot well beneath the steam opening.

The circulating water for the condenser is drawn from a canal 30 inches wide and 3 feet deep, which has been dug and concreted, in the sub-basement.

This canal connects with the water reservoirs in the Henry L. Pierce Building and in Engineering A.

The circulating water is pumped from this canal by a Lawrence Centrifugal pump, with a seven-inch diameter discharge, driven by a 35 H.P. vertical engine, set on a masonry foundation.

The cooling water leaving the condenser is to be piped to the cooling tower, from which it returns to the canal and reservoirs through piping installed about three years ago. A dry air pump, formerly in the Henry L. Pierce Building, has been moved into the turbine room, and is to be connected with the top of the condenser.

The condensed steam will be discharged into tanks on scales and weighed.

The water supplied to the glands is to come from the condensed steam. The leakage from the glands will thus introduce no error in the steam weight.

To study the flow through the turbine, connections have been

made in the rotor casing, so that the pressures can be noted, at every point, where the length of blade changes or where the diameter of the rotor changes.

About thirteen gauges are to be connected to the side of the turbine for these pressures, holes having been drilled in the casing for this purpose.

The power of the turbine is to be absorbed by a water brake, designed and constructed by the Westinghouse Company.

It consists of a wheel of broad face on the rotor shaft, with teeth like those on a milling cutter. The casing which surrounds this wheel has teeth on its inner circumference. Water is taken into the space between the two wheels. The outer casing has an arm which connects with some weighing system of levers or which bears on a scale.

A two-trolley crane of six tons' capacity has been erected over the turbine. The rotor weighs about six tons. For several years, tests of steam turbine plants, varying from 500 to 5,000 kw. capacity, have been made by students under the direction of the department for their thesis work, but the limitations necessarily imposed upon outside plants have prevented the carrying on of such investigations as we shall now be enabled to make in consequence of the possession of a plant of our own of practical size.

The new Option in Steam Turbine Engineering, which has been introduced into the Course in Mechanical Engineering, is referred to elsewhere in the REVIEW.

The usual number of investigations were made during the last school year, especially in connection with the thesis work, a few of the more important being as follows:—

1. Friction and Velocity of Steam in a Nozzle. By an advanced student. The nozzles used had a diameter seven-eighths of an inch at the throat, and varied in length from eighteen inches downwards. As this nozzle was shortened, it approached the condition of the nozzles used in some steam turbines.

2. Experiments to determine the causes of the occasional freezing of the moisture in the distributing valve of the engine and tender equipment of the air-brake system.

3. A continuation of the investigation of the causes of failure of locomotive driving springs.

4. Investigation of the friction of high pressure air flowing in pipes. For this purpose, piezometer rings were used on each side of each fitting, and the losses due to fittings and to straight runs of pipe were noted.

DEPARTMENT OF MATHEMATICS

Professor Bartlett resumes mathematical teaching after two years of administrative work as Acting Secretary of the Institute.

Professor Wells's leave of absence is continued during the coming year.

Dr. Moore has returned from a year of advanced study at the University of Turin. An interesting part of his year's experience was his participation in the Fourth International Congress of Mathematicians, held in April at Rome. An account of the congress by Dr. Moore has appeared in the September Bulletin of the American Mathematical Society.

Mr. Joseph Lipke, a graduate of Columbia University, comes to the Institute from the University of California as Instructor in Mathematics. Mr. Lipke succeeds Dr. W. H. Roever, who accepted in June an appointment as Assistant Professor at Washington University, of which he is a graduate.

The first six chapters of Volume II. of Woods and Bailey's "New Course in Mathematics" have been issued in pamphlet form for the use of second-year students, pending the publication of the whole volume.

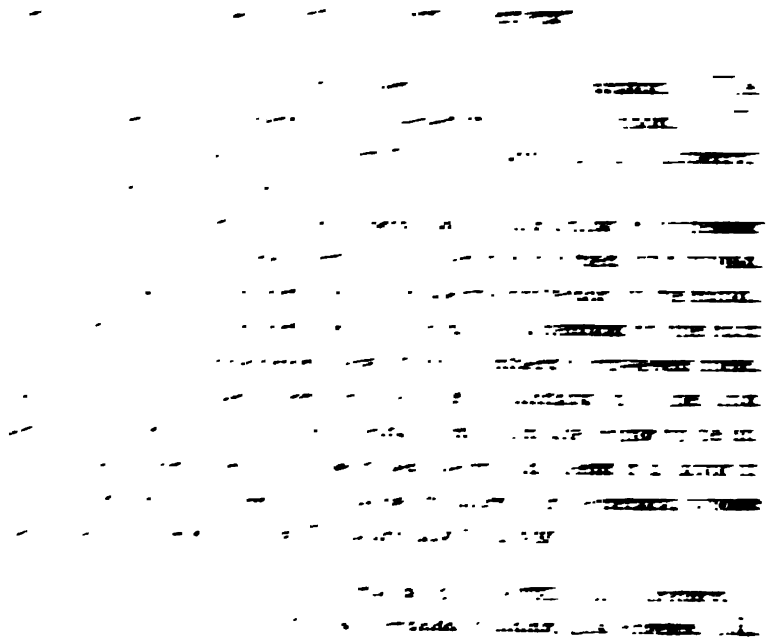
THE GRADUATES

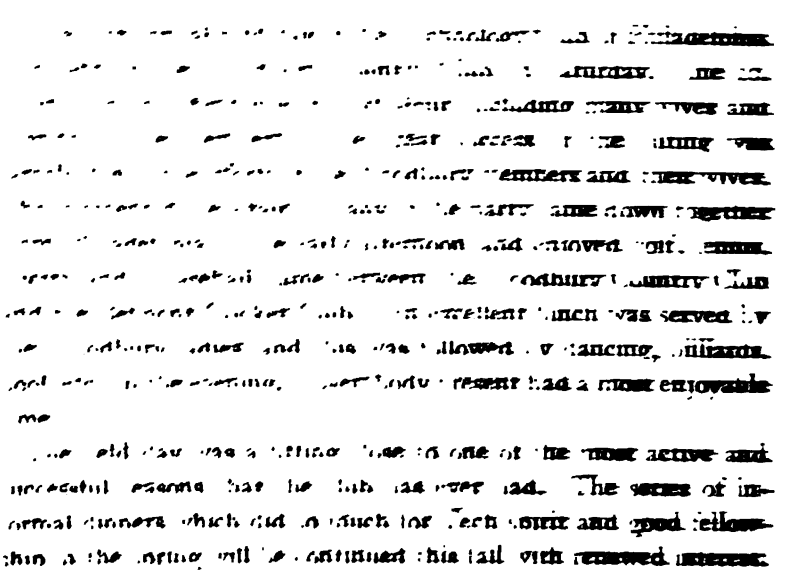
THE TECHNOLOGY CLUB OF SOUTHERN CALIFORNIA

A special meeting of the Technology Club of Southern California was held at Los Angeles, Monday evening, July 13, to meet Professor and Mrs. George F. Swain, who were spending a few days in our section. The meeting was at the home of Mr. Burdett Moody on Beacon Street, who very kindly opened his spacious rooms for our entertainment. Mr. W. T. Knowlton, president of the association, called the meeting to order, and after a few words of welcome called on Professor Swain, who gave us a very interesting talk in a general way about the conditions at the Institute, emphasizing the importance of the two great questions which the Institute is facing to-day, the choice of a new president and the question of a change of site.

The culinary department of Mr. Moody's establishment then furnished us with refreshments, and altogether a very pleasant evening was spent renewing old acquaintance with Professor Swain and enjoying the pleasure of meeting Mrs. Swain, both of whom were greatly pleased with Southern California, and expressed a desire to make their home here. We certainly hope that their wish will be gratified, and that we shall see them with us soon again. The following men were present: V. L. Benedict, L. Bixby, H. M. Blaisdell, W. D. Fuller, H. G. Folsom, J. W. Johnson, E. Johnson, W. T. Knowlton, C. T. Leeds, E. L. Mayberry, F. H. Merrill, B. Moody, L. F. Mesmer, H. B. Perkins, L. A. Parker, H. A. Prime, A. B. White.

On Friday, July 31, Professor Richards dropped in on us unexpectedly, and, not knowing of our Technology Club, invited those Tech men whose addresses he knew to meet him at the Van Nuys Hotel, where he had arranged a dinner, after which the meeting adjourned to Mr. Storrow's office and listened to a paper by Pro-





All Tech men in Philadelphia should get in touch with the club at once, in order that they may not miss the first of these dinners.

PERCY E. TILLSON, *Secretary*,
3411 Walnut Street, Philadelphia, Pa.

THE TECHNOLOGY CLUB OF NEW YORK

Arrangements are being made for smokers, addresses, entertainments, and ladies' night, which will make a full programme for the winter, the first social event being the reception to members of the class of '08, which was held September 26.

A useful reform went into effect at the club this summer; namely, the posting of names for non-payment of accounts. It is the only way to save time, money, and patience.

A more important change will probably be effected in October, which is an increase in the Board of Governors from five to ten members. Notices for a special meeting are now in preparation.

WILLIAM H. KING, '94, *Secretary*,
36 East 28th Street, New York, N.Y.

PUBLISHERS' PAGE

A MARKET-PLACE FOR MEN.

The publishers of the REVIEW believe that its usefulness can be broadened by affording an opportunity for bringing together men who are seeking positions and those who are seeking men. We shall in our next issue establish such a department in our advertising pages, where also will appear other miscellaneous "wants." These matters relating to employment will be brought to the attention of the proper officers of the Institute, who may be able to assist in placing men. A four-line notice half the width of the page will cost one dollar; more than four lines, twenty cents a line additional. Copy for the January issue must be here by December 15.

A GREAT YEAR FOR TECH.

The year 1909 promises to make important history for ALMA MATER. The reunion which comes in June will undoubtedly be the largest and most enjoyable meeting of the clans that has ever been held. During the year everybody expects that the two vital questions still unsettled will be satisfactorily answered by the Corporation: "Who is to be President of the Massachusetts Institute of Technology?" and "Shall the Institute remain where it is or move to a new location?" Because of the great interest centred in these matters and in view of the largely increased circulation which the REVIEW will have as the official publication of the Alumni Association, the influence of the

REVIEW will be largely increased, and its advertising pages will be greatly enhanced in value.

The next number will be sent to over eight thousand Institute men, the larger number of whom are buyers or influence buying. We hope that you who read this and have something to sell will try the January number with a keyed advertisement, to see what it is worth. We think it will surprise you.

A REVIEW OF THE FUTURE.

The January REVIEW, which begins volume eleven, will be of much interest to sons of Technology. It will contain the general plans for the All-Technology Reunion to be held in June, an illustrated view of student life and activities from the students' standpoint, and a symposium from alumni officials bearing on the part the Alumni Association is taking and may take in the future on the development of the Institute.

There will be an article on the new Research Laboratory of Industrial Chemistry, which brings Technology into the most intimate relations with the great industrial institutions of the country, and we hope to have a review of some of the work of the Mechanical Engineering Department leading along similar lines.

The most important achievements of Tech men will be mentioned under the heading "Tech Men in the Public Eye," and, if a classmate or acquaintance is worthy of mention in this department, we shall be glad to have you send us the facts. We desire to make this list selective, and it will be edited with discrimination.

NEWS FROM THE CLASSES

1882.

WALTER B. SNOW, *Sec.*, 170 Summer Street, Boston, Mass.

J. E. Chapman, with his family, spent the summer as a neighbor of the secretary at North Falmouth, Mass. Since the early eighties Chapman has been located with his brother at Evanston, Wyo., where they control a hundred thousand acres of land, number fifty thousand sheep among their live stock, and put up a couple of thousand tons of hay per year. J. E. usually spends the summers in the east and winters in Wyoming, while his brother, G. F., is usually in or near Boston during the winter, and in Wyoming during the summer and fall.

1885.

ISAAC W. LITCHFIELD, *Sec.*, 88 Broad Street, Boston, Mass.

The appointment of Richards as director of Cooper Union, New York city, will be noted with satisfaction and pride by every Tech man. The position carries with it perhaps as much responsibility and honor as any in the field, and, although, he has a most serious and difficult problem before him, his success as an educator and his ability as an organizer indicate without doubt that Cooper Union will soon begin its period of greatest usefulness.—Hugh McRae was in Boston during September, and some of the fellows caught a passing glimpse of him.—Morris Wilder, who has been spending the summer at Biddeford Pool, Me., dropped into the office between trains.—Rawson, who was for several years with Winslow & Bigelow, has gone into business for himself as an architectural engineer at 16 Beacon Street, Boston.—Charles Stanley Ruffin died June 30, after a long illness at the home of his mother, Mrs. Josephine St. Pierre Ruffin, in Boston. He was a son of Judge George L.

Ruffin, the first negro in the North to be appointed a judge. His appointment to the Charlestown court was by Governor Benjamin F. Butler. Stanley Ruffin was born in Boston, was graduated from the grammar and the English high schools, and studied electrical engineering at the Institute. He was sent, before the completion of the course, to Omaha by Charles Francis Adams, president of the Union Pacific Railroad, with a party of Harvard and Technology students to enter the mechanical department of the Union Pacific. On the death of his father he returned to Boston, and entered the employ of the Edison Electric Illuminating Company. He resigned in 1893 upon obtaining an important contract. He served in the Boston Common Council from Ward 9 during the years 1894, 1895, and 1896, serving as Council chairman, Committee on Subway, and a member of the Committee on Finance and other important committees. He was elected an alternate delegate from the Eighth Congressional District to the Republican National Convention at St. Louis in 1896.

1887.

EDWARD G. THOMAS, 157 Congress St., Brooklyn, N.Y.

Sturges has returned to business in good health and reinvigorated by his enforced rest. He is now a member of the firm of S. B. Chapin & Co., stock brokers, in the Rookery, Chicago.—Stoddard has the sincere sympathy of his friends in the loss of his eldest daughter, Mary LeBaron, who died early in the summer at his home at Welland, Ont.—Draper spent the summer in Europe.—The Secretary is now superintendent of the Ariston Marble Co., 203 37th St., Brooklyn, N.Y.

1888.

WILLIAM G. SNOW, *Sec.*, 1108 Penn Mutual Bldg., Boston, Mass.

Owing to the commendable promptness with which the July number of THE TECHNOLOGY REVIEW was issued, your secretary's budget of Class News, which appears below, was received too late for publication.

Not until recently did the secretary learn definitely of the death of Algernon Sydney Warren, which occurred Nov. 3, 1907, at Buffalo, N.Y. Warren had been connected with the Calumet & Hecla Company for a number of years. He was always interested in class activities at the Institute, and showed his continued interest through valuable assistance rendered in securing the Walker Memorial Fund. Although he had not been in the best health, his death was entirely unexpected and occurred from heart failure.— B. R. T. Collins is in El Paso, Tex., where he will spend several months in connection with the El Paso Electric Railway Company, one of the properties managed by Stone & Webster.

The great class event of this year was its twentieth anniversary of graduation, which was celebrated in a fitting manner on June 8 and 9 at Plymouth. Starting from the Technology Club in automobiles, the members journeyed to the Hotel Pilgrim, where after luncheon a long-to-be-remembered baseball game took place. A cup was awarded to Shaw, the champion base-runner. Later the class was entertained at Stone's beautiful place on Manomet Point, where the members were received by Mrs. Stone. The class dinner took place at the hotel in the evening, and was not the least attractive feature on the program. Good old Tech songs were sung, also some new ones. Stone told us about doings at and aspirations of the Institute, with which as member of the Corporation he is more familiar than other members of the class. After dinner came the bowling contest, Newton landing the cup. Next day came golf, tennis, and more baseball, the golf cups going to Binney and Williams in the two classes. Leaving the hotel after luncheon, the cars journeyed leisurely along the South Shore, arriving at the Brunswick in time for the general spread of the Alumni Association. Here we were joined by other '88 men, going later to the Pop Concert for the grand finale of our two days' celebration. All voted the outing a most successful one. Expressions of regret were received by the secretary from a large number of members unable to be present. Members present: Bates, Claflin, Gerrish, Child, Faunce, Runkle, Shaw, Stone, Holman, Conner, Stetson, Newton, Sawyer, Besler, Buttolph, Wood, Brown, Blanchard, Hamblet,

Snow, Cheney, Underhill, Linzee, Binney, Robb, Thompson, Cole, Pierce, Baldwin, Williams, Sjöström, Bradlee, Bridges, Frizzell.

The present address of Richard Hampton Vose is Colima, Mex., where he is bridge engineer of the Mexican Central Railway.—The address of Arthur B. Frizzell is 6 Felton Street, Cambridge, Mass.

1889.

PROF. W. E. MOTT, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

Professor Albert Sauveur will spend the winter in Paris, having been granted leave of absence for the college year 1908–09. He expects to publish in the near future "Laboratory Experiments in Metallurgy," a text-book for general use. On Easter Sunday last Professor and Mrs. Sauveur were presented with a son and heir, Albert, Jr.—Edwin F. Dwelley has recently made a lengthy report to the Lynn city council, defending the present water supply of that city. The report will be published in book form by the city. W. S. Johnson had previously reported on the same question, and recommended installing a filter plant.—In view of their earlier experiences on the board of editors, certain members of the class will be interested to learn that the Executive Committee has given the *Technology Quarterly* a "Christian burial."—The following new addresses have been received: H. H. Hunt, care of Stone & Webster, 147 Milk Street, Boston.—F. W. Ranno, Office of Chief Engineer, U. P. R.R., Omaha, Neb.

1892.

PROF. WILLIAM A. JOHNSTON, *Sec.*, Mass. Inst. of Tech., Boston.

The following letter has been received from Francis Walker, which, I am sure, will be of interest to the class of '92:—

I was glad to get your letter, and can assure you that, although I have never, up to the present, contributed any items of personal information for the class news, it has not been from a lack of interest, as I have always read

those published. I feel that at the present time I may appropriately do so, however. It gives me great pleasure to announce to you and all classmates that I was married on June 25, in London, to Miss Helen O'Sullivan. As the government granted me my annual leave on the other side, we were able to enjoy a very pleasant trip in France and Switzerland. I went to Europe in November, 1907, and travelled considerably in Great Britain, Germany, France, etc., on the business of the Department of Commerce and Labor. While spending a few days in Rome about Christmas, 1907, I had the pleasure of meeting Leonard Metcalf in the Vatican. We did most of the principal sights of the city together, and it added greatly to my enjoyment of them to be in such good company. I regret that I have not been able to see more of my old classmates. Very few have crossed my path in my various wanderings, and circumstances have prevented me from being present at the annual reunions in Boston. With greetings to yourself and classmates.

—Channing M. Wells writes:—

I am sort of out of the world out here in Southbridge, at least as far as seeing any of the '92 men is concerned, although it so happens that I am just in receipt this morning of a letter from J. Scott Parrish, who is with his family at Falmouth. He writes that he is leaving next week for a canoe trip in Maine and Canada.

As you perhaps know, he is now a full-fledged Virginia colonel, being on the staff of the Governor of Virginia. I have teased him a good deal about this, as it so happens that Governor Swanson is a cousin.

1893.

FREDERIC H. FAY, *Sec.*, 60 City Hall, Boston, Mass.

Orton W. Albee has recovered from a long illness following an operation for appendicitis last spring. After spending the whole summer in recuperating, most of the time at camp on the Damariscotta River, Me., Albee returned to New York in September to resume his work of consulting mining engineering. His address is 1201 Flatiron Building, New York City.—Frederic W. Baker, naval architect, is with the Lake Engineering Company of London,

Eng. Baker's home address is Claymont, Del.—A. F. Bemis is chairman of the committee on standard specifications for staple gray goods of the National Association of Cotton Manufacturers, of which committee S. Parker Bremer is also a member. This committee is endeavoring to secure uniformity in the manufacture of cheaper grades of cotton goods, there being at the present time much diversity in the production of different mills. It is expected that Bemis's committee will co-operate with the committee on uniform contracts of the American Cotton Manufacturers' Association, and, if the results which are hoped for can be attained, they will have an important influence upon the cotton manufacturing industry of the country.—Maurice B. Biscoe is senior member of the firm of Biscoe & Hewitt, architects, of 25 East Eighteenth Avenue, Denver, Col. Biscoe went to Denver early in 1906, having in charge the erection of the Cathedral of Saint John in the Wilderness. In 1907, he formed a partnership with Henry H. Hewitt, '98, and the firm has done a great deal of work. Biscoe is secretary of the Rocky Mountain Technology Club.—John R. Brittain is chief draughtsman of the mechanical department of the Los Angeles Railway Company, 2003 Congress Street, Los Angeles, Cal.—Joseph W. Ellms's address is changed to 2812 Madison Road, Hyde Park, Cincinnati, Ohio.—The new address of Daniel D. Jackson is Department of Water Supply, Gas, and Electricity, 13–21 Park Row, New York City.—Charles H. Johnson, civil engineer and superintendent of construction in the Quartermaster's Department, United States Army, is stationed at Fort Dade, Fla., which is located on Egmont Key, a low sand island at the mouth of Tampa Bay.—The address of George E. Merrill, formerly of Annapolis and Baltimore, Md., is 1629 Asbury Avenue, Evanston, Ill.—The New York address of Percy H. Thomas, of Thomas & Neall, consulting electrical engineers, is 2 Rector Street, New York City. The firm has a Boston office at 12 Pearl Street in charge of Mr. Neall. Thomas devotes most of his time to the work of the New York office, although he is a frequent visitor to Boston.—Robert N. Wallis, treasurer of the Fitchburg & Leominster Street Railway, has been actively engaged in the arrangements for the convention of the American Street

and Interurban Railway Association and its affiliated organizations, to be held at Atlantic City, N.J., in October. The American Street and Interurban Railway Association is a reorganization of the American Street Railway Association, and is the general organization of street railway interests of the country. Connected with this parent organization are five subsidiary associations dealing with accounting, engineering, claim, transportation, and traffic, and manufacturing interests. Wallis is acting president of the first-named of these subsidiary organizations, the American Street and Interurban Railway Accountants' Association, and is a member, *ex officio*, of the executive committee of the general organization. Charles C. Pierce, '86, manager of the railway department of the General Electric Company, Boston, has charge of the entertainment features of the convention, he being one of the vice-presidents of the Manufacturers' Association.—Miss Nettie M. Willey's address is 28 Winslow Street, West Roxbury, Mass.

1896.

PROF. CHARLES E. LOCKE, *Sec.*, Mass. Inst. of Tech., Boston, Mass.

Mr. Charles S. Newhall has temporarily severed his connection with the mining business, and has been spending the past four months at Portland, Ore., with Mrs. Newhall. Besides getting a rest he has made a thorough study of the fruit-growing industry.—Mr. Frank A. Thanisch was still in Arizona at last accounts, although his movements have been so rapid during the past year that it has been hard to keep track of him.—Mr. A. W. Thompson has invented a humidifying apparatus for moistening the air in cotton mills, coal mines, and all other places where dry air is undesirable. It is being put on the market by the G. M. Parks Company of Fitchburg, Mass.—Mr. A. E. Smyser spent his vacation on Cape Cod this summer, and stopped over in Boston on his return long enough to pay a visit to the Institute. Since his rise to the position of general superintendent of the La Belle Iron Works, Steubenville, Ohio, the size of the plant has been increased, and improve-

ments made in the sheet and plate mills. It is owing almost entirely to these improvements that the plant was saved from a complete shut-down during the recent depression. At present they are running at about 40 per cent. of the full capacity. He reports that his brother, F. M., is still with the General Electric Company, while Jim has been forced to spend some time at home on account of ill-health.—Jimmy Driscoll appeared on the streets of Boston a few days ago, looking happier than usual, if such a thing is possible. The cause was a baby girl born the day before.—Johnny Hallaran has left Toledo and come on to Atlantic, Mass., where he was taking life easy at last accounts.—Charles E. Locke spent the month of June in Nova Scotia in charge of the Mining Summer School. Later on he made a trip to the West, and saw Bill Huey at Rinconada, N.M. Bill has a copper mine in embryo, having given up his heating and plumbing business in Boston about two years ago. He believes he has a good prospect. He is well located at an elevation of 8,000 feet, and the climate is delightful. The last report from him was that he was waiting for a cloud-burst to fill his reservoir, and in the mean time was packing water in kegs on burros from a spring two and a half miles away.—Professor E. C. Jacobs, of the University of Vermont, spent the summer vacation at Cape Porpoise, Me., for the benefit of Mrs. Jacobs's health.—A recent number of the Boston Sunday *Herald* contained an account of the work of H. C. Lythgoe in connection with the investigation of food and drugs by the Massachusetts State Board of Health. The article contained cuts of "Lythy" in action on the job. Just at present he is on his annual vacation in the White Mountains, and the quality of the Boston milk supply is suffering in consequence.

The annual meeting of the class of '96 was held at the Technology Club on Tuesday evening, June 9, at 6 P.M. The usual reports were read and approved. Charles E. Locke was elected secretary and Dr. J. Arnold Rockwell assistant secretary for the ensuing year. It was voted to levy an assessment of $1.00 covering the years 1908, 1909, 1910. The usual class dinner was omitted this year, so that all might participate in the spreads and buffet lunch at the Brunswick. The following changes of address have been

received:—Andrew H. Green, Roseau, Dominica, West Indies.—Harry D. Barto, 109 Wendell Avenue, Pittsfield, Mass.—Charles K. Cummings, 144 Congress Street, Boston.—Francis M. Miller, 700 Wood Street, Wilkinsburg, Pa.—A. F. Ruckgaber, care of Merrill, Ruckgaber, Fraser Company, 50 Church Street, New York City.—Paul W. Litchfield, 580 Crosby Street, Akron, Ohio.—M. L. Fuller has severed active connection with the United States Geological Survey, where for several years he acted as chief of the section dealing with artesian water investigations in the Eastern United States, and has removed to Brockton, Mass., to take up the business of growing cranberries. The Fuller-Hammond Company, of which Mr. Fuller is a leading member, is the third largest cranberry corporation in the world, owning several hundred acres of bearing bog of the highest grade on Cape Cod. Mr. Fuller still retains his appointment on the Geological Survey, and has an allotment for scientific work on Long Island, N.Y.

1897.

JOHN ARTHUR COLLINS, *Sec.*, 67 Thorndyke St., Lawrence, Mass.

Ninety-seven was not largely represented at the Commencement celebrations this year, but those who did have the courage to appear seemed to enjoy themselves. The secretary held forth at a punch-bowl in the Hotel Brunswick, Tuesday afternoon, and, sad to relate, the men who came around could be counted on the fingers of one hand. If it had not been for the kindly assistance of '98, the contents of the bowl would surely have overflowed as the ice melted. The fellows who appeared were Cowles, Carter, George Fuller, Learned, and Worcester. After a very satisfactory lunch the '97 contingent marched to Symphony Hall, where it was joined by Carty and Loveland.—Henry E. Worcester, who was at the alumni reception and Pops for the first time since leaving the Institute, is now with the Revere Sugar Refinery, East Cambridge, Mass.—Lieutenant William A. Kent, of the Twenty-second United States Infantry, had planned to be at Commencement, having arrived from Cuba on

May 12; but a government order compelled him to leave on June 11 for Fort Liscum, Alaska, where he is now stationed. Thus it is that the unfortunate fellows who are scattered all over the country and can't attend any of the class reunions are the ones who are longing to do so, while the men in and around Boston, who can come, will not go to the trouble.—Frederick A. Hunnewell was married on June 23 to Miss Sarah Louise Swan, of Stratford, Conn.—Several of the men spoke to the secretary in relation to the dinner to be held at the grand reunion next year. Each one was in favor of having the ladies present, as in 1907, when all agreed that we had a very enjoyable time. Also that it be held not on the Pop Concert night, when all have to hurry away to Symphony Hall, but, say, on Monday evening, when we can dine at our leisure and enjoy a social hour or two afterwards. If any of the men have any ideas on this matter, the secretary would be glad to learn of them.—Benjamin A. Howes (VI.) was married on August 5 to Miss Ethel Dench Puffer, of Framingham, Mass.—William S. Rhodes (XII.), formerly located at Fort Sam Houston, Tex., in the Quartermaster's Department-at-large, U.S.A., is now stationed at Fort Hancock, N.J.—James T. Baker (V.) is with Carson Pirie, Scott & Co., Chicago, Ill.—Charles B. Clark is a member of the firm of C. B. Clark & Co., Baltimore, Md.—Frank E. Mansfield is with the Empire Consolidated Gold Mining Company at Groom Creek, Ariz.—F. H. Watts (I.) is now engineer, Maintenance of Way, Logansport Division, Pennsylvania Lines, Logansport, Ind.—The engagement is announced of Miss Alice May Hoitt and John Hastings Howland (I.).

1899.

HERVEY J. SKINNER, *Sec.*, 93 Broad Street, Boston.

Corse has resigned his position with the Detroit Lubricator Works, and on November 1 will become assistant manager of the Michigan Smelting and Refining Company of Detroit.—The following appeared in a recent number of the *Street Railway Journal*:—

Mr. C. A. Smith, who on February 1 was appointed superintendent of roadways of the Georgia Railway & Electric Company of Atlanta, Ga., has been connected with electric railway construction work since he was graduated from Boston Tech in 1899. Mr. Smith came to Atlanta in the fall of 1899 as assistant engineer on the Atlanta Rapid Transit Company's construction, and later was superintendent of construction and assistant engineer in charge of construction work in Birmingham and Memphis. He returned to Atlanta Jan. 1, 1906, and was connected with this company as engineer in the roadway department until his appointment, as before stated, as superintendent of roadways on February 1.

—Fowle is the proud father of a son born May 28. The young man's name is Frank F. Fowle, Jr., and it is to be hoped that he will follow in the footsteps of his worthy father.—The following clipping appeared in a recent number of the *New England Automobile Journal:*—

Realizing the advantages of the automobile over the horse-drawn vehicle, Cambridge, Mass., has decided to purchase City Electrician Timothy C. O'Hearn a motor car to be used in the performance of his duties. Mr. O'Hearn finds the horse and carriage formerly used inadequate to meet the demands of the office, and, as time is of great value in protecting the city, the automobile will be of great service.

—The following changes of address have been noted:—John W. Woollett, 33 State Street, Albany, N.Y.—Harry G. Johnson, 7 Forrest Street, Cambridge, Mass.

1900.

H. E. Osgood, Room F, Chamber of Commerce, Boston, Mass.

The secretary is in receipt of but a small amount of interesting information from the members of the class, and some of that which has been received is to be sincerely regretted. The death of Francis X. McGowan has come to the knowledge of the secretary from a communication received from his father. To those of us who were personally acquainted with Mr. McGowan the loss will be keenly

felt, as we knew him as a good friend, congenial and straightforward. His passing is a loss to the Institute and to 1900, as he was a worthy representative of Technology. He was riding on a locomotive with the engineer, who was an old friend. The accident happened in Lawrence, Friday, September 4, on the Boston & Maine Railroad. Through some undetermined cause two freight trains collided, Francis being pinned under the tender with the fireman. He was hurried to the hospital, and everything possible done for him, but he was too seriously injured, and expired at 5.45 P.M., two and one-half hours after the accident. The funeral was from his late home, 14 Berkeley Street, Lawrence. The secretary extends the condolences of the class to his bereaved parents. —As the vacation period is now over and we are returning to our various lines of duty, we presume Mr. H. O. Keay, heretofore assistant professor of mechanical engineering at McGill University, Montreal, will take up his duties as professor of transportation, to which he has been elevated. We wish him well.—Thomas D. Perry has sent cards announcing the birth of a daughter, Frances Goodenough, born July 29. Having heard nothing further, it is to be presumed that the little one is doing nicely.

1901.

R. L. WILLIAMS, *Sec.*, 30 Waban Hill Road, Chestnut Hill, Mass.

The flight of time is emphasized by the rapidity with which the time comes around to write these reports. It seems to the secretary as if he had no sooner gotten one off than it is necessary to grind out another. However, if the boys will let him know what they are doing, he is only too glad to send it to the REVIEW. L. S. Butler during the past year has studied at École des Beaux-Arts, Paris.—Since graduation C. F. Willard has studied law, been admitted to the Massachusetts bar, and at present is an assistant examiner in the United States Patent Office in Washington.—Norman L. Skene is consulting engineer for A. S. Morss Company, on marine problems in connection with power boats. He has

written three books on technical subjects.—Robert White, Jr., is president of the United States Ozocerite Company, with office in Chicago. He has travelled all over this country and made two trips to Europe.—Austin T. Hyde writes he is assistant superintendent of the Fort Hill Chemical Company at Rumford Falls, Me.—Carl F. Johnson, general inspector of the Johnson Service Company of Milwaukee, informs me that he has travelled in British Columbia, climbed mountains, and fallen into a crevasse in a glacier. He resided in California one year, and was in San Francisco during the earthquake. He says, "I lost everything but life and clothes, was given up for dead, and some people still think I am dead." He has been through forty States, Canada, and Mexico.—Arthur C. Davis has two children, A. Colby Davis, Jr., born Aug. 5, 1903, and Dorothy C. Davis, born Sept. 14, 1905.—S. L. Wonson is an assistant engineer for the Mexican Railroad on bridge construction.—Frank D. Rash is married, and has one child, Dillman A. Rash, born July 21, 1907. Rash is general manager of the St. Bernard Mining Company.—Ellis F. Lawrence, besides his regular work as an architect in Portland, Ore., has been running a forty-acre ranch at Dead River, raising apples. In a recent letter he writes that '01 has been holding a miniature reunion in Portland, as Henry Marcus, Frank Baxter, and himself have been talking over old times and comparing notes. Marcus made good in Goldfield in the early days, and is now representing the American Chico. Company. Baxter is on his way to Alaska.—Lawrence announces the birth of his second son, Denison Lawrence, on the 1st of July, 1908. He says he is almost as large as his first child, and is a typical son of Oregon.—Charles I. Auer is a mining engineer at Durango, Mex. He is married, and has one child.—Allan W. Rowe lectures on chemistry at the Boston University School of Medicine, and in addition is engaged in private research work at Harvard, by courtesy of the Fellows of the University.—E. J. Proulx is a constructing engineer, and specializes on the construction of dams, reservoirs, pumping stations, and pipe lines. He is located at Philadelphia.—L. P. Wood is assistant designing engineer for the Board of Water Supply of the City of New York. He

is to be congratulated on the arrival of a son, June 25, 1908.—J. R. Putnam is an inspector for the Factory Mutual Fire Insurance Company. He is married, and has one child.—I had the pleasure of meeting Philip Moore on the street a few days ago. He was looking prosperous, and said he was located in Chicago. He thought it would be a good idea if the class elections were conducted by mail instead of at our annual meeting, so as to give all the fellows a chance to vote. I should be glad to hear what the class thinks of the proposition.—The following changes in address have been received. W. I. Aldrich, 101 Benevolent Street, Providence, R.I.—W. I. Martin, 5212 South Park Avenue, Chicago, Ill.—E. P. Burdick, 1011 Hibernia Bank Building, New Orleans, La.—William M. Vermilye, 58 Adams Street, Quincy, Mass.

1902.

F. H. HUNTER, *Sec.*, 75 Park Street, West Roxbury, Mass.

Several classmates have made a change of base during the past summer. Ross Bates left Boston for New York early in the summer, and is now at 29 Broadway (with Wonham & Magor, as in Boston), and resides at 770 St. Nicholas Avenue.—Chauncey Manning is located with Monks & Johnson, mechanical engineers, at 20 Central Street, Boston.—Dick Reed has shifted location, as the *American Telephone Journal*, of which he was editor, has been combined with *Telephony* of Chicago, and Reed becomes editor of the united publication. His office is 342 Monadnock Building, Chicago.—Blodgett is again with the McGraw Publishing Company at 239 West 39th Street, New York City.—R. S. Williams has been elected secretary of the Technology Club, Boston.—Mendenhall has returned from Ely, Nev., to Salt Lake City, and is again with the Utah Light and Railway Company of the latter place.—As usual at this time of the year there are weddings to report. Everett married Miss Alice de Silva, of Wellesley Hills, on the 16th of September.—George Ross's wedding is set for October 1, the bride being Miss Annie Gertrude Budge, of Montreal.—The engage-

ment of Robert Pope to Miss Laura Fischer, of New York, has recently been announced.—C. H. Boardman, Jr., is engaged to Miss Edith Davis of Lynn.—Millar is removing to Chicago to take a position as sales engineer with the Studebaker Brothers Manufacturing Company of 378 Wabash Avenue.—Galaher has left Stone & Webster, and his present address is 892 Essex Street, Lawrence, Mass.—Wright is at Pine Beach, Va., with the United States Geological Survey.—George D. Rogers, who was labelled as "Address unknown" in the recent Class Record, has been located with the New England Telephone and Telegraph Company, 164 High Street, Boston, in the traffic department.—Some new members of the class have been reported. Philip Hilaire Bourneuf was born on January 8 of this year.—Richard Channing Clapp came to the home of A. C. Clapp on June 19.—Dana Maclean Greeley arrived on July 5.

1903.

FREDERICK A. OLMSTED, *Sec.*, 93 Broad Street, Boston.

MacIntosh writes from Milwaukee that he has been on a six-months' trip to the Argentine on business, returning in May. He says in his letter:—

In connection with this trip you will probably be interested to hear that I met R. Lage, of our class, on the boat at Southampton, and made the trip as far as Rio de Janeiro in his company, and he made it very pleasant for all of our party. I saw him again in Rio on my way back, when he came out to meet me, and placed a launch at my disposal for the day. His father, with whom he is, is a very big man in Rio, having a ship repair plant, which is most modern and up to date. Lage came back to this country shortly after I saw him, and married a girl from Philadelphia.

There are four members of our class here in Milwaukee,—P. R. Parker and Wehner with the Bucyrus Company, and F. Taylor with the Cutler Hammer Company and myself. I see Parker and Wehner very often, as we all belong to the University Club, but Taylor I see very seldom. We now have under way a Tech organization here, which we hope to have going soon with about fifteen members.

I often see Cheney, in Chicago, who is with his father. He was president of our Northwestern Alumni Association last year. He is married: the rest of us are not.

—R. B. Williams is now with the Miami Copper Company. His address is P. O. Box 349, Globe, Ariz.—Pelton has announced his engagement to Miss Augusta L. Vibberts, of New Britain, Conn.—W. H. Adams has accepted a position as professor of mechanical engineering at the Imperial Pei Yang University, Tientsin, China. He left during the latter part of July. Mail may be addressed to him at 22 Dix Street, Winchester, Mass.—Olmsted was married, April 29, to Miss Harriet A. Craft, of Roxbury, Mass.—Swett has been spending the summer in Europe. He will probably have something to tell of his trip for the next issue of the REVIEW.—Fales took a yachting cruise up the coast of Maine this summer. He sailed in the yawl "Eleanor," under the pennant of the Cottage Park Yacht Club.—Tuel is at present with Stone & Webster in Boston, but does not know how long he will be in town.—Question blanks will soon be sent out by the secretary for information for the five-year Record Book to be published this winter. It is hoped that all members of the class will respond promptly, and write as fully as possible about themselves and their work. We hope to make this book a great success. News from any of the fellows is wanted at all times by the secretary. It is especially desirable that any members visiting Boston or living in this vicinity keep us advised of their whereabouts.—The following new addresses have been noted:—Chester S. Aldrich, 380 Park Street, Dorchester, Mass.—Frank S. Bradley, 157 Central Avenue, Dover, N.H.—R. M. Field, 1300 Harvard Street, N.W., Washington, D.C.—Floyd T. Taylor, care of Cutler Hammer Manufacturing Company, 50 Church Street, New York, N.Y.—John M. Grice, Mexico Mines of El Oro, El Oro, Estado Mexico, Mex.—Louis W. Adams, 6630 Kimbark Avenue, Chicago, Ill.—Miss Laura S. Plummer, Green Hall, University of Chicago, Chicago, Ill.—J. S. Sheafe, 245 East 61st Street, Chicago, Ill.—P. M. Lawton, 212 West 44th Street, New York City.

1904.

R. A. WENTWORTH, *Sec.*, Saylesville, R.I.
M. L. EMERSON, *Res. Sec.*, 161 Devonshire Street, Boston, Mass.

The proposed outing and baseball game on Peddock's Island, Boston Harbor, was indefinitely postponed, as there were scarcely enough '04 men living near Boston this summer to have a successful game of "three old cat."—In addition to his two weeks' vacation from the factory your secretary has taken a three months' vacation from class work. Letters from some of the faithful reveal the following items of news. "Buck" Edes left the Reclamation Service nearly a year ago, and is now with the North-western Pacific Railroad at Eureka, Cal.—Mr. and Mrs. George Edward Corbitt announce the marriage of their daughter, Charlotte McLeod Wallace, to Mr. John Whitman Shaw on September 5, at Annapolis Royal, N.S. Mr. and Mrs. Shaw are to live in Cobalt, Ontario, where Shaw has been working for some time.—Stetson was married on June 12 at Warren, Pa., to Miss Hilda Caroline Anundsson. His address is now 806 Franklin Avenue, Wilkinsburg, Pa.—Mr. and Mrs. Edward Scott Randall, of Medford, Mass., announce the engagement of their daughter, Bernice Mildred, to George Edwin Atkins, of San Francisco, formerly of Newton.—George W. Francis writes in part: "While not a graduate of dear 'Old Tech,' I feel highly honored to class myself as a former student of Tech and above all, the class of '04. I continued my studies at my state college, 'Old Delaware,' and received my sheepskin from there." He was in Binghamton, N.Y. (126 Chenango Street), in charge of the construction of a reinforced concrete building during the summer. His permanent address for mail is 1020 Munroe Street, Wilmington, Del.—R. E. Havens is at Fulton, N.Y., as assistant superintendent with the Fulton Contracting Company, which has a section of the barge canal.—Turgeon writes from Camp Punta Gorda, north coast Cuba, thus:—

Have been in Cuba more than a year now, most of the time near Santiago in the mines described by Richard Harding Davis in "Soldiers of Fortune."

For the last three months have been on the north coast, prospecting some iron ore properties. Am forty miles from the nearest town, Baracoa, settled by Columbus, and not changed any since. Fifty miles to the nearest railroad. Have two camps and some forty men, 'most all negroes, who are descendants of the original Indian tribes about here. For two months not a white man came near my camps, and I cannot speak English without an effort. Chief diversions are hunting shells and turtles on the reefs, shooting crocodiles and boa-constrictors on the rivers, and attending native "bailles." Was engaged last February to Miss Marguerite Newhall, of North Andover, Mass. With best wishes to all my classmates.

—Harry Rollins has a son, Henry Martyn Rollins, born June 23.—Lounsbury was married on June 30 at Superior, Wis., to Miss Genevieve Mae Eaton, daughter of Mr. and Mrs. Alfred S. Eaton.—Bernie Blum was to have been married in August, but I cannot swear that the event occurred as planned.—The fact has just reached me that Sheafe was married in October, 1907, to Miss Irene G. Russell at Still River, Harvard, Mass. They are living in Newcomerstown, Ohio.—William B. Murray is at Valhalla, N.J., with the New York Board of Water Supply.—Al Ferry has gone into business in Fitchburg, Mass., as a contractor on electrical work.—Holcombe spent a part of his vacation at Wiano, Mass., with Charley Haynes.—Lang has deserted his tunnel job at Detroit for the Detroit plant of the Solvay Process Company. He is on the engineering staff, and expects to participate in a proposed enlargement of the plant. Lang is on the governing board of a newly formed alumni association of Tech men near Detroit.—New addresses are: A. H. B. Arnold, Elks Club, Joplin, Mo.—Moses Brown, Jr., care Cole & McDonald, Box 719, Sault Ste. Marie, Ont.—N. C. W. Chapman, 1123 Terpsichore Street, New Orleans, La.—L. C. Clarke, Jr., 382 Ontario Street, Chicago, Ill.—Edw. R. Crane, 2102 East Madison Street, Seattle, Wash.—Harry H. Groves, Room 372, South Station, Boston, Mass.—J. Lawrence Lyon, 136–138 Liberty Street, New York, N.Y.—J. Crawford Nyce, Loomis, Cal.

1905.

GROSVENOR D'W. MARCY, *Sec.*, 246 Summer Street, Boston, Mass.

The 1905 notes for the July number of the REVIEW were issued separately, owing to the secretary's failure to get them in in time to be printed. A copy was sent to each '05 subscriber. Any one who did not receive a copy or who desires another will be sent one on request.

A large part of the news for the three months just ended is of the copper-plate variety. Walter Bent's announcement was received just after the last notes had been sent out. He married Miss Bessie Brockett, of Rochester, on June 8.—Edward C. Smith and Miss Edna Grace Fowler were married on August 15 at Fremont, Ohio. They will be at home after October 1, at 1129 Birchard Avenue, Fremont, Ohio.—Henry L. Jackson married Miss Bertha Davette Taggart, of Boston, on August 19, and will be at home at 1200 Ohio Street, Lawrence, Kan.—George Bayard Jones and Miss Lucile Hinsdale Stone were married on September 16 at Plymouth, N.H. Their address is The Decatur, Decatur and Florida Avenues, Washington, D.C.—George C. Thomas married Miss Marie Josephine Honer, of Hartford, Conn., on August 22, and will reside after October 15 at 700 Noble Avenue, Bridgeport, Conn.—Charles W. Hawkes and Miss Pancha Louise Clark were married on September 17 at Braintree, Mass. The Institute was well represented at this wedding, Albert Prescott being best man, Clark and Casson, '06, Marcy, '05, and Lord, '09, ushers. Charlie will live at 81 Brook Street, Pawtucket, R.I., where he is mechanical engineer with Howard & Bullough American Machine Company, Limited.—A. C. Gilbert (V. '05) and Miss Florence Vail Walker, of Cambridge, were married September 1 at the home of the bride. They will live at 254 Arlington Street, West Medford. Gilbert has been with the Merrimac Chemical Company for about two years and a half at their plant in North Woburn. Thus ends the list of wedding announcements for this number of the REVIEW. They not only are of great personal interest, but also show that the fellows are

beginning to settle down. Best wishes and congratulations from the class to them and theirs.

Several additions have been made to 1905's representation in Boston. Kenway and Guibord both resigned their positions as examiners in the Patent Office at Washington, to take positions with the patent department of the United Shoe Machinery Company, 205 Lincoln Street, Boston.—Bob Farrington is with the same company, having completed two years at the Harvard Law School.—Doc Lewis is back at the Institute in the Industrial Chemical Laboratory, having grown into his title at last, which is, being expanded to its limit, Doctor of Philosophy, *summa cum laude*, Breslau, July, 1908. He speaks well of German life in general, but relates several amusing incidents that would seem strange in this country. At one time he was nearly arrested for attempting to extract his pocket handkerchief while riding a wheel, it being against the law to operate a bicycle with less than two hands on the handle-bar. It was also provoking to climb a long hill, anticipating a coast on the other side, and find at the top a sign saying, "Bicycle riding down this hill forbidden." Not for fear you would run into some one, but in the careful solicitude of a paternal government that you take no risks for yourself. But this oversight and protective care entails what would seem to us a cumbrous system, which sometimes admits of petty graft. An instance of this is shown in a letter Doc wrote after taking a trip with Ralph Gifford, who is still studying at Leipzig:—

Gifford and I got together at Christmas in Breslau, and after ten days of the cloudy, drippy weather one learns to expect during the Silesian winter, we started off for a short trip southward, along the western slopes of the Carpathians, to Budapest and Vienna. *En route* an experience with the Hungarian conductor may be of interest. I had a round-trip ticket, which makes everything easy on German roads, but Gifford, bound back to Leipzig, did not. He was, however, entitled to one stop-over, which we made at Poprad-Felka, up among the high Carpathians. Now, when we got off at Poprad, we were expected to take that ticket to the station-master to be stamped; but, as that official let us through the gate, and in answer to our inquiries assured us that it was, "All right, all right," we let it go at

that. But the conductor next day shook his head, and said it was no good, and, when asked what we should do about it, said, "That is a very difficult question," and went off to think about it, returning at intervals to remind us of its difficulty, and being profoundly at a loss as to how to solve it. Finally, he returned, with an idea, "Maybe, perhaps, I might find along the road a station-master, a friend of mine, who would countersign this ticket." The "grease" being supplied at this point, he took the ticket, and returned with it in half an hour, signed at a station we had passed shortly after the incident was opened. After a week of this, Gifford, pacing his room in Vienna and rubbing hard at the back of his head, remarked, "If ever I get back to Boston, the next travelling I do shall be in a civilized country, otherwise known as U.S.A." Back at the 'Stute, Doc says, "Certainly no more pleasant a professor, and probably no more agreeable, helpful laboratory atmosphere could one find than I had in Breslau, but, all the same, Tech for me."

—The secretary happened to meet Dick Marsh, who returned to this country on the "Cymric" early in September. After his Sophomore year Marsh was sick, and spent the remainder of the year in an engineering camp in the West. He returned to take his third year with '06, but the death of his parents caused him to miss his final exams, so he could not enter the fourth year at the Institute. He then went to the University of Lausanne in Geneva, where he specialized for a year in hydraulics and French. Finishing there, he started out around the world, travelling awhile, then working awhile. He thus found an interesting fact, that in almost any "new" country he could locate a pretty good engineering job within a few days. He worked for J. G. White Company for a while in the Philippines, and is now with Speyer & Co. of New York, who build and operate railroads in almost all parts of the world. In this way he has about earned the title of champion globe-trotter of the Class, having been in Bolivia, South Africa, Morocco, and now returning from China to find his next assignment.—A letter was received from William Seward Mann, who is general manager of the mine "El Placer," Tlacolula, Oaxaca, Mexico. During the latter part of 1905 he designed a 200-ton mill for a mining company in Costa Rica, Central America, and on leaving Tech went down

there to build it. The mill consisted of 2 gyratory crushers, 40 stamps, plate amalgamation, traps, dewatering boxes, 2 tube mills, shaking amalgamating plates, concentrators, 2 sets of classifiers, cyanide sand plant and slime plant. The power was furnished by water brought a mile by ditch and 2,000 feet by pipe, under a head of 588 feet. In running the survey, the line was cleared through a dense tropical forest by six men armed with machetes, and the machete declared far ahead of the hatchet for survey work, as well as for dealing with poisonous snakes. Owing to the dense woods and to the character of the course, which was on the bank of a deep cañon, where at times it was necessary to hang on by one's teeth, measuring by tape was out of the question, and all stakes were set by stadia. In April, 1907, Mann resigned his position with the Costa Rican company, to take his present position above stated, which is with one of the mines of the Boston & Oaxaca Mining Company.—Fred Goldthwaite has been spending the summer at Harrison, Me. His health broke down last winter, and he had a hard time pulling together, but struck a good convalescing job as assistant director of Camp Wildmere, where he could enjoy out-door life generally and overseeing seventy-five boys in particular, and now looks brown and healthy and is looking for a job.

Attention is called to the Visitors' Register at the Technology Club. This has been instituted at the Club to facilitate locating friends in the vicinity, when visiting Boston, and is kept in the form of a book at the Club, 83 Newbury Street, and is always open for all past students, whether members of the Club or not. This feature can be made of much use and profit if the fellows will notify the secretary, before making a visit to the Hub, as to when they will come, how long they will be here, and how they may be reached. This will be posted near the register, and help to let your friends know you are coming, and enable them to plan to see you while you are in town. Drop in at the Club, and you are pretty apt to see some one you know, or else register, and give your friends a chance to know you are here.

Get out your Portfolio, look it over (once started, you are good for an hour), pick out your intimate friends, and make a note to write

them to meet you in June, 1909. Then study the other pictures, so you can call any '05 man by name when you meet him at the greatest reunion ever. Then look to it again that you are put down in the vacation schedule for June, 1909.

1906.

GEO. F. HOBSON, *Acting Sec.*, 164 Holyrood Ave., Lowell, Mass.

I. *On the Part of the Secretary.*

Class activities have not been very great during these past three months, owing to the fact that so many of the fellows have been out of town on their vacations. However, many things have happened that concern the class vitally The retiring secretary, Mr. Heywood, has turned over all the class property to the acting secretary, and he has also submitted a financial report, which may be briefly summarized as follows:—

Receipts.

Received from H. C. Henrici	$45.66
First annual reunion	13.74
Class dues (does not include contribution prior to 1907)	109.20
	$168.60

Expenditures.

Current expenses ('06–'07)	$37.94
Midwinter dinner ('08)	24.25
Current expenses ('07–'08)	47.15
Second annual reunion ('08)	40.15
Catalogues for class correspondents	17.00
Balance paid to G. F. Hobson, secretary	2.11
	$168.60

The Permanent Class Fund is $275.

As can be seen by the above statement, the acting secretary has only $2.11 to carry on all the current expenses of the class. This is absurdly low, and every one is urged to keep his class dues paid

up, in order that the work of the class may not be hampered by lack of funds. Moreover, we wish to have a surplus each year to add to the Permanent Fund, in order that later the interest from this fund may pay the running expenses of the class.

II. *Personal Announcements and Notes.*

The secretary takes great pleasure in recording the following announcements. Professor and Mrs. A. R. Crandall announce the marriage of their daughter, Ellen, to Mr. Mark H. Place, Wednesday, July 1, 1908, Milton, Wis.—Mr. and Mrs. E. H. Corrie announce the marriage of their daughter, Emily Elizabeth, to Mr. H. A. Kingsbury, on Saturday, Aug. 1, 1908, Westfield, Mass. At home, The Hanover, Meridian Street, Washington, D. C.—Mr. and Mrs. W. H. Moore announce the marriage of their daughter, Eva Lizzie, to Mr. Wiear Louis Rowell, Thursday, Sept. 3, 1908, Advent Christian Church, Lynn, Mass.—Mr. Albert E. Clark announces the marriage of his daughter, Pancha Louise, to Mr. Charles Whitney Hawkes, Thursday, Sept. 17, 1908, at All Souls' Church, Braintree, Mass.—Allyn C. Taylor (II.) was married, June 16, 1908, to Miss Florence E. Welten, of Lawrence, Mass.—David C. Davis (VI.) was married Sept. 5, 1908, to Miss Margaret C. Laing, Quincy, Mass.—Clarence B. Powell (VI.) became the proud father of a baby girl in July.—Ralph R. Patch (XI.) also is the father of a baby daughter.—On the other hand, Raymond J. Barber (III.) was blessed with a baby son in August. (Since the father is a Barber, we suppose the son must be a little shaver! Any objections to the above pun should be mailed to the secretary, who will promptly pigeon-hole them.)

III. *Class News and Letters.*

Our correspondent from Philadelphia, Mr. Tillson, writes: C. B. Powell (VI.) has left Philadelphia, and is now with the Johnston & Lorimer Company, Wichita, Kan.—William J. Walsh (X.) is now with the Fayette R. Plumb Tool Company, Frankford, Pa.—

Ralph N. Sargent is with Pussey & Jones of Wilmington, Del.—T. L. Hinckley writes that he is working in the city engineer's department, Altoona, Pa.—E. A. Frank finishes his apprenticeship with the Allis-Chalmers Company, and may go to Germany to take up advanced engineering.—Willis Ranney is still with the C. S. W. at Red Wing.—Herbert Whiting writes that he is spending his vacation at Sebec Lake, Maine. He says, "It is all fishing here, but the fish are not biting very well at present." We wonder what kind of bait he is using in that prohibition State.—Polhemus sends in word that he is back again in Carthage, Mo., with the American Zinc Lead and Smelting Company. We have been given to understand that he is in charge of the underground work, filling the position of mine "super."—Harold Lord writes from Hawaii as follows:—

I was going down the street last Monday [Aug. 26, 1908] when I saw a face across the street that made me bawl out "Mears," but got no answer. However, at once I looked up the passenger list of the "Clive," and saw Henry S. Mears, Manila. On my way down to the wharf I ran across him getting back to his floating home. "Bill" Furer had just come in from Pearl Harbor (where he is working on the borings for the dredging work), so I picked him up and we had a reunion *à trois* '06. Mears is on his way to do a bit of prospecting, and says he may take three months or three years [etc.].

And last, but not by any means least, the secretary got a short note from "Wee" Williams, whose letter is given below:—

I've been in from the Black Hills now for nearly a month, part of my time having been spent around town here [Boston] and the rest at camp in the Belgrade Lakes, Maine. It seems good to be back here again, as it is two years since I've had a look at Beantown, and I'm beginning to feel like a stranger. I wish I could get in touch with some of the fellows, but, unfortunately, I have to return to the Mogul Mining Company, Pluma, So. Dak., by the 5th of September.

The secretary sincerely hopes that more of the fellows will write him short notes similar to those printed above.

1907.

ALEXANDER MACOMBER, *Sec.*, Fern, Shasta County, Cal.
BRYANT NICHOLS, *Res. Sec.*, 138 Fremont Avenue, Everett, Mass.

I. *On the Part of the Secretaries.*

The problem of maintaining alumni interest and of keeping in touch with the sons of '07 has filled the spare moments of the secretaries this past year. Experience in our own case (and it is typical of all classes) has shown that for the first few years after graduation the changes in business and location are rather frequent, and consequently it becomes difficult to keep in close and accurate touch with the boys. It has therefore been decided to adopt a local correspondence scheme. By this plan, territory is divided into groups, geographically chosen, and a local correspondent selected. Each correspondent is to follow up the fellows in his district as far as possible, report to the secretaries for publication any news of interest, endeavor to see that the fellows join local Tech organizations, and, if practicable, engineer a few dinners and gatherings of '07 men during the year.

The various divisions, with their correspondents, are as follows:—

New England District . .	Bryant Nichols, 138 Fremont Avenue, Everett, Mass.
	Charles E. Allen, M. I. T., Boston, Mass.
	Harold S. Wonson, M. I. T., Boston, Mass.
New York District	Not yet secured.
Pittsburg District	Parker V. Dodge, Box 837, Pittsburg, Pa.
Washington District . . .	George A. Griffin, United States Department of Agriculture, Berlin, Md.
Chicago District	John M. Frank, 3810 Grand Boulevard, Chicago, Ill.
Rocky Mountain District .	John Evans, 1310 South 14th Street, Denver, Col.
Southern District	Otis G. Fales, care of the Gregg Company, Ltd., New Orleans, La.

Pacific Coast District . . Alexander Macomber, Fern, Shasta County, Cal.
Foreign District . . . . . Bryant Nichols, 138 Fremont Avenue, Everett, Mass.

The resident secretary will have charge of this correspondent work, and valuable results for class and the alumni office should be obtained. Already letters from a number of the fellows have been received, as will be seen under the heading "Letters," and all seem to think this an excellent plan. It is not the purpose of the secretaries to attempt any elaborate local class organizations. It is thought that any such plan would be cumbersome, and the local Tech alumni associations, which every man should join, will take the place of such organizations. It is rather the idea that the correspondent should be one whom the fellows can drop in on, when they are in his vicinity, to talk over old times and learn the latest news. So every one is urged to give the plan his support, for it will surely help, not only in being a pleasant means of association, but in preserving class spirit and loyalty to "Dear Old M. I. T."

One other matter deserves some attention. The secretary of the Technology Club at Boston has opened at the club-house on Newbury Street a Visitors' Register for all Tech alumni, whether members of the club or not. During the year many alumni visit Boston, and it is very pleasant if they can know of some classmate or Tech friend who also is in Boston, that they may call and see him. It is the purpose of this register to be a sort of "Guide to Tech Friends." If the class secretaries know of any alumni who are coming to Boston, they are expected to send to the Technology Club, on a prepared blank form, the name of the visitor, the date of his arrival in Boston, his residence, his Boston address, and the date of his leaving. This information is posted in the register, and is always at the disposal of any one who calls at the club-house. Any and all '07 men who expect to come to Boston, even for one day only, are urged to write to the resident secretary beforehand, giving the above information, and he will promptly send a blank to the club. Do not fail to call at the club, 83 Newbury Street, when

you come to Boston, and look at the register, see which of your Tech friends are in town, and call on them, if possible, This is an admirable plan, and should help materially in keeping up friendships made in days at Tech.

Notices of activities of any other Tech organizations will be posted on the bulletin at the club-house if you will send the same to the club secretary, R. S. Williams.

II. *Personal Notes and Changes of Address.*

As usual, there are several additions to the "Benedict" list. Emerson H. Packard was married, June 27, to Miss Frances May Owen, of Boston.—George A. Griffin and Miss Ellen Franklin Gifford, of Woods Hole, Mass., were married June 28.—Harold A. Kingsbury and Miss Emily E. Corrie, of Westfield, Mass., were married August 1.—Harold A. Duncan and Miss Agnes Louise Pohl, of Temple, Tex., were married in July. Duncan is at Globe, Ariz., with a copper company, and it was there that he met his bride.

—The following from the Boston *Herald* will be of interest:—

HAVERHILL, MASS., July 8.—Fred Morrill, a graduate of the Massachusetts Institute of Technology, '07, starts to-morrow for China to begin his duties as an instructor at the Imperial University at Tientsin. He will teach Chinese students about railroads and structures in English, there being a corps of nine English instructors at the university.

—Another clipping from the Boston *Record*:—

Clarence D. Howe, a well-known Waltham young man, and a graduate of Tech, where he has been an instructor for the past year, has accepted a position in Dalhousie University, Halifax, N.S. Mr. Howe graduated from Tech with high honors, and is sure to make good in the Canadian university.

We are all sure he will.

—Bryant Nichols will not return to the Institute as assistant, but

has secured an excellent position in the manufacturing end of the Revere Rubber Company at the factory in Chelsea, Mass.

—From a Boston paper, under date of Sept. 2, 1908, is taken the following:—

A home wedding in Dorchester last evening was that of Miss Ethel May McDonald and Howard Root Chase, of Malden, Mass., a structural engineer.

—H. R. Crohurst is at "The Bartol," corner Huntington Avenue and Gainsborough Street, Boston.—R. H. Crosby, 540 Washington Boulevard, Chicago, Ill.—P. V. Dodge, Box 837, Pittsburg, Pa.—Albert E. Greene is employed in the metallurgy department of the Illinois Steel Company. His address is 6028 Jackson Park Avenue, Chicago, Ill.—P. P. Greenwood rooms with Crosby, and his address is as above.—G. A. Griffin's address now is care of United States Department of Agriculture, Berlin, Md.—Bert D. Johnson's address was previously given as 109 Luzerne Avenue, Pittsburg, Pa. It should be at the same street and number, Pittston, Pa.—John Kimball, Crafton, Pa.—W. W. Pagon writes from Hotel Chattolanee, Chattolanee, Md.—Karl Richards is now at Slab Fork, W. Va.—T. W. Roby, Jr., is with McClintock Marshall Construction Company, Rankin, Pa.—W. D. Robinson, 8 Harrison Street, Stapleton, Staten Island, N.Y.

A few other changes will be noticed under the "Letters."

III. *Letters.*

S. R. Miller writes from Cincinnati:—

I expect to be in the northern part of Ohio and Western Pennsylvania from about the middle of September, selling my firm's commodity; namely, paper. There is an alumni organization here with between forty and fifty eligibles. The main feature of same is a weekly luncheon at one of the numerous cafés,—namely, "The Besmark,"—every Tuesday, at which eight or ten always show up, from the class of '77 to '07. They also have a winter and summer regular meeting, etc. This summer we went to the new Cincinnati Water Works, and especially through the filtration plant,

which is the result of an M. I. T. brain, Elms, who has it in charge. It is the largest filtration plant in the world, not excepting the one in Paris. Meet Fleming, '07, on the street once in a while. He is married, and working for Proctor & Gamble in one of the suburbs, Ivorydale. Shields, '07, stopped off here last week for a few hours on his way east to Lynn, where he is to be with the General Electric Company.

—H. S. Wilkins says he has little to write, but he "continues to enjoy the steel business very well."

—R. H. Kudlich, from Wilkes-Barre, Pa., writes:—

I have been with the Lehigh & Wilkes-Barre Coal Company as one of the assistants to the chief engineer, looking after the pumps, hoisting engines, and all other inside machinery, including the mule barns.

—J. E. Tresnon writes on the letter-head of the Edison Electric Illuminating Company from Pottsville, Pa.:—

I am enjoying life to the full extent in spite of the above-named company. I went to work for the Westinghouse on Oct. 1, 1907, and they went broke on October 23. I left them on Feb. 3, 1908, and came here. Since being with this company I have received some mighty good work in the electric light business, so that it is perhaps a good thing for me that I left the Westinghouse. I went right into the hard-work end of the business, so that now I can either climb a pole, run an electric light station, or test a meter in a satisfactory manner.

—From Heilwood, Pa., comes the following:—

I am here in this small coal town in the mountains trying the best I know how to keep happy and contented. The only coal I dig is samples for analysis, and I spend most of my time in a small laboratory we have fitted up here.

H. A. Frame.

—"Stud" Leavell writes:—

I have been in Mexico, and expect now I shall be in the north-west country. I am just (August 24) getting out from a long attack of typhoid fever, during which I lost thirty-five pounds. . . . Remember me to the boys.

His address is care Charles M. Campbell, Temple, Tex.

—From John Kimball we have the following:—

I received a postal from H. C. Libby, . . . saying that he was engaged in topographic surveying in the Connecticut River Valley for the State of Massachusetts. He says the position is only temporary. As to myself, I am still with the Pennsylvania Lines West of Pittsburg, in the office of the chief engineer. Like a good many others, I am not getting very rich on the job, but am thankful to have a position.

—From H. C. McRae we have a few lines:—

No prospects in sight whatever for engagement or marriage, and have no children. Am working for the Baltimore Sewerage Commission as assistant engineer, in charge of the testing plant.

—Under date of September 14, Otis G. Fales writes:—

To-night I leave New Orleans for New York. Next Saturday I sail for Porto Rico. I expect to be gone about three or four months. I have some erecting to do there, and then I shall have charge of the San Juan office at the same time. Probably I shall arrive here, New Orleans, about the first of January. After that I think I shall remain in New Orleans, or at least make it my headquarters, as I am the manager here, and the outlook is pretty good for me. I have not met any of the fellows of our class here. I saw O'Hara, '06, the other day. He is the manager of the Birmingham office of the Sullivan Machinery Company. He stopped me on the street with, "I don't know your name, but you are a Boston Tech man." We spent a very pleasant afternoon together. My San Juan address is care of the Gregg Company, Ltd., San Juan, P.R. Mails leave at 12 M. on Saturdays from New York.

—F. S. Hamilton, ex-'07, writes from Webb City, Mo., on the letter-head of the Producers' Information Bureau:—

I am very glad steps have been taken to get the fellows of '07 together, and shall be glad to do anything necessary to promote a feeling of class loyalty in those whom I may meet. We have lately discovered that there are ten Tech fellows down here in the Joplin district, and we have arranged a dinner for next Tuesday night, September 8. It is to be the first in a brilliant series.

As for myself, I am looking after some producing leases, and am in with

a consulting engineer in the above bureau, chiefly giving reports on the ore market. We are also developing some good leases on our own account, from which we of course expect to make our everlasting pile.

There is no sign of engagement, marriage, or children.

—From V. H. Dickson:—

As I look over the month since June, '07, I am tempted to say, "Checkered career." I have done designing and draughting for automobile factory, draughting and computing for mechanical engineer, sold breakfast foods on the road, was foreman of a tin and cornice shop, did irrigation surveying in New Mexico, and for the last ten weeks have been working on a plumbing contract which father has in the South. I think I shall go to Detroit, the home of the motor car, and look for a job.

—The following is taken from a characteristic letter from our "Sunny Jim," Crosby. Evidently, Johnnie Frank is planning a dinner of the Chicago '07 men. Good for John!

It's a good stunt to get the fellows around Chicago together, only please be canny on the price, for the raises in pay are likely to be few, and I don't believe any of the fellows around here are in the $2,400 per class. I would suggest an *à la carte* affair at a mediocre hotel, say the Grand Pacific. We could get a private room there if a dozen showed up. Then each man could go as steep as his stomach and sheepskin wallet called for. Not that I am authority at all, but I speak for Greenwood and myself and our pocket-books. We have not depended on "pa" for a year now. Well, about myself. I am a student apprentice in the telephone department of the Western Electric Company, and considered by them as the lowest order of student. I am drawing $65 a month, and see no immediate raise in view. Am lucky to get that. About "marriage, children, or even engagement." Would you consider it on $65 per? Nay, nay, Pauline! Nevertheless,—well, say, John, you won't be calling on her and offering a bottle of brain food or the like? Honor bright? Now, old chap,—well, say, I've really found her at last, but we are not announcing an engagement because—oh, it's that $65 per again. Nevertheless, come over to the West Side at 540 Washington Boulevard any Sunday at 2.30 P.M., and I'll show you a pleasant afternoon, and mayhap you may meet her if you can keep the brain food to yourself. So long. Yours in '07,

RALPH "CROS."

—Edward W. Hamill writes:—

I am teaching again this year in the Manual Training Department of the Yeatman High School in St. Louis.

—From W. W. Pagon comes the following:—

In regard to my work, I have held my job so far, and have been very kindly treated, being advanced about as fast as I can stand. So far I have had a smattering of design. My future plans, as I see them now, consist in remaining with the Baltimore Bridge Company. I cannot do better. I am not engaged or married. The grosser details of my life consist in getting up, working, eating, going to bed, with reading and some study.

—George Griffin says:—

I've been in Delaware this summer, making a survey and investigation for Uncle Sam, but expect to spend the winter in Washington. I am coming to Boston the last part of this month on a vacation, and hope to see some of the fellows then.

—Karl Richards, who is with the Virginian Railroad Company, writes in part:—

I have been living in the "sticks" for the last five months, and it certainly seemed good to have a letter from civilization. I have been having a varied career with the Virginian, as far as experience is concerned. When I first went with the company, I went to work on the final estimates in the Norfolk office. Since then I have been on maintenance of way work, instrument man on tunnel construction, time-keeper, and concrete inspector. At present I am on preliminary and location work in the Winding Gulf section of West Virginia. I am level-man of the party and camp draughtsman. I shall probably be here all winter if they start construction. I have had no chance to even think of matrimony, and that of course throws out all chances of children.

—Extracts from letters written to the resident secretary from the secretary follow:—

JULY 6, 1908.

You had better thank your stars you are not in this country now. The heat is terrible,—100 to 110 in the shade. We live in our pajamas, and, if

it were not for the cool nights which bless these mountains, one could not endure it. Down in Redding it is 110 and over, day and night; and every one that can clears out of town. The Fourth of July was a great and glorious occasion here. The whole outfit got drunk and raised the devil. The company did their best to help it along by sending out six dozen bottles of beer and materials for an awful punch. Imagine such doings back East! But they look at things differently here.

SEPT. 5, 1908.

I expect to leave here about October 1 for the South, to be gone a month or more. . . . My whereabouts will be uncertain for a time until I return, though mail will of course be forwarded, and probably lost. Forest fires are engaging our attention now, and we have gangs out protecting the lines day and night. The destruction of property and timber has been fearful. Many fires have been set by these ranchers to put the power company out of business, as we take all the water in the country. Tension runs high, and several shooting scraps have occurred in the next county. They have threatened to blow us up, and have dynamited several ditches. But, if they come down here to the plant, they are liable to get more than they anticipate. So, you see, life is rather strenuous, and not upon the tranquil lines of old Boston.

—Parker Dodge, who is a salesman for the Youngstown Car Manufacturing Company, writes from Chicago:—

I have been away from Pittsburg almost constantly on different trips for three weeks now. . . . I have been in Chicago for several days, and have seen some of the fellows. Had a long talk with Bragdon (X.) over the 'phone. He is at the stock-yards, doing work for Swift or Armour in the chemical line. He is living at his home in Evanston, Ill. Reports all lovely, but no particular news. . . . Had lunch to-day [September 16] with Naramore (IV.). and Reed (IV.) They are getting along finely apparently, and say they like Chicago. (Bad taste!)

Dodge is doing rushing work with the correspondence in his district, and is planning a dinner of the men near Pittsburg soon.

—A letter received from Walter Bigelow, dated September 17, will interest many:—

You will be glad to hear that I have found what I consider a fine opening, and have gone in with the J. R. Worcester Company, structural engineers.

. . . I spent most of the summer at home. . . . We had two weeks of Nantucket salt air, which did us good. . . . My address for the present will be care J. R. Worcester Company, 79 Milk Street, Boston, Mass.

—William D. Milne is at Rock Bluff, Fla., and a letter received from him at that place follows:—

I am glad of the opportunity of renewing my connection with '07. I graduated from the Institute with the class of '08. On the 18th of June my engagement to Miss Lorna Woodford McLean, of Simsbury, Conn. (Wellesley, '08) was announced. Since July 1, 1908, I have been employed by B. H. Hardaway, of Columbus, Ga., general contractor and engineer. I have been on various works,—dam construction at West Point, Ga., and Langdale, Ala., construction and design of buildings and warehouses, etc., for tobacco plantation in Gadsden County, Florida,—and am at present making a topographic and resource survey of a number of square miles of wild land on the Apalachicola River, Florida.

—Harold D. Reed, ex-'07, writes from Cambridge, Mass.:—

Many thanks for the letter. I shall be pleased to do anything I can to help along the class. Since leaving Tech, I have been working for the telephone company in Boston, as a member of the traffic department. The work is very interesting, and presents some good opportunities. . . . While in Fredericton, N.B., this summer, I ran across W. Allan Staples, ex-'07, who is an electrical engineer and contractor, and seems to be doing well. He has one of the finest offices on the chief business street, with a formidable exhibit of X-ray pictures, induction coils, etc. It looked natural to see the shingle of the Electrical Engineering Society hanging on the wall, also a picture of the Rogers Building.

I regret that I was absolutely unable to attend the first reunion dinner of our class, but shall try not to let it happen again.

—Ernest A. Miner from Malden writes:—

I am very glad to hear from 1907. Immediately upon the close of school I obtained work with the Boston Elevated Railway Company in the department of elevated and subway construction. My work has been entirely that of surveying the territory and routes of a proposed Malden extension

of the elevated system. This includes accurate base-line work for the structure and also bench levels. I remain gladly at the call of '07.

—From the Office of the Factories, Boston Rubber Shoe Company, Malden, Mass., we have a letter full of news from Harry Moody:—

I think it is a mighty good scheme to keep in touch with the fellows. As for myself, I am still "doing time" with the Boston Rubber Shoe Company as assistant mechanical engineer, having been with them since July, '07, and have picked up quite a good experience along engineering lines, particularly the practical end of it. I was sorry to have missed the reunion, but I couldn't arrange it so as to get there, as we were doing some special work at the time; but you can bet I shall be there next year if I have to throw up my job to do it. Suppose you know Bill Woodward is in this vicinity again. He is with Forbes Lithograph Company in Revere. Oscar Starkweather is a *father!* What do you know about that! He is in Louisville, Ky., with the sewerage commission. Lamont has gone West again, mining. I haven't heard that you are married yet, but take it from me, old man, there is nothing like it. It's one of the things that you don't know what you have missed until you have tried. . . . Remember me to all the boys.

—Extracts from a long and interesting letter from W. P. Rayner from St. Louis follow:—

. . . Secured employment with the Oscar Lear Automobile Company, makers of the Frayer-Miller automobiles and motor trucks, a month after I left M. I. T., in '07. The first work I had was superintending the preparation of their new factory, to which they were moving, at Springfield, Ohio. . . . In the new location I started in at the bottom, and was given opportunity to school myself in the automobile business in all its branches. Later I was made foreman, in charge of all the erecting of trucks and automobiles, and at different times had charge of engine testing, chassis testing, finishing, etc. I have recently been promoted to the position of traveling representative of the firm, and at present am on a trip through the West, establishing agencies and looking after trade in general.

Rayner's home address, to which mail should be sent, is 712 South Fountain Avenue, Springfield, Ohio.

—Albert S. Kendall, who was with the class in the third and fourth years, in Course IV., writes:—

I had the honor a month since to announce my engagement to Miss Harriet R. Means, of New York City. I am doing my best to earn a living for one, in the hope of some time qualifying for the double-harness class.

—Harry E. Fisher, who was with the class but one year, but who is a loyal supporter of it, sends us a long letter, from which only parts can be taken:—

. . . In September, '04, . . . I entered the shop of the Chandler Machine Company, Ayer, Mass. . . . After a limited experience on machine tools, I was advanced to the draughting department. . . . Late in 1905 I began my office work, and here my first real business education began. The Chandler Planer Company was incorporated . . . with myself as one of the incorporators and clerk of the company, a position which I have held to the present day. . . . I am also treasurer, clerk, and assistant general manager of the Chandler Machine Company. . . . I was recently elected director and clerk of the Leighton Auto Company of Brockton, Mass. . . . I live quietly at home, with the intention of assuming in the near future greater domestic responsibilities.

1908.

JOHN T. TOBIN, *Sec.*, Leesville, Va.

RUDOLPH B. WEILER, *Res. Sec.*, 26 Brooks Street, Brighton, Mass.

I. *On the Part of the Resident Secretary.*

No doubt some of the fellows will be surprised at the above heading, as your resident secretary wrote several letters announcing that Tobin had resigned. In the meantime the resignation had been withdrawn, so that matters now stand as above.

Unfortunately, your resident secretary took up the duties of the office in the middle of the summer, so that he was unable to get hold of the class records (and hasn't got them yet for that matter), as all the fellows were away. Also the official register in preparation by the alumni office was not in readiness in time to be of any

use for this issue of the REVIEW, so that last year's catalogue and the portfolio had to be depended on for the addresses of the fellows, and consequently some letters were returned "unclaimed," owing to insufficient address. The resident secretary will try to write to every graduate member of the class at least, in the next few months, and also promises to answer all letters received, but be patient!—and also use your slide-rule to figure up how many letters must be written. In getting material for this issue, only about sixty letters were sent out, and these to fellows most likely to know about several others. In that way a few "probable" locations and addresses were secured in addition to those published, but it was thought best to wait for more certain information before publishing.

After January 1 all graduate members of the class may become members of the Alumni Association upon payment of the annual assessment of two dollars, which includes subscription to the REVIEW. Those who have already subscribed need pay but one dollar additional. All members of the class who are not graduates are eligible as associate members of the Alumni Association (without the right to hold office). All such candidates please send names to Walter Humphreys, secretary, to be acted on by the committee of the association. The dues, etc., are the same as for graduate members. Bills for dues will be sent out about January 1. Single subscription to the REVIEW, sent to those not members of the Alumni Association, two dollars. To date, only forty-six of the fellows have subscribed. Brace up! The only possible way to keep in touch with the fellows is to take the REVIEW.

It may be of interest to know that the resident secretary has had reported to him, directly or indirectly, only four graduates as not working. Several fellows express themselves as willing to make a change when the chance comes. Though several very interesting letters have been received, we can print only the following one in this issue:—

LEESVILLE, VA., Sept. 10, 1908.

Your humble servant has now been an amateur Southerner for three months. I am down here "in Old Virginia" on a brand-new railroad, the

"Virginian," and am certainly having some great experiences. I ran across one loyal "Tech" man the other day, Anderson, ex-1910. He was timekeeper over a big section gang. I rode with him about five miles on a camp-car, and we sang the "Tech" songs and cheered. You can guess that we enjoyed it. I felt just as enthusiastic as I ever did on Rogers steps. It only brought home more forcibly to my mind the fact that all the fellows that have the chance should join the "Tech" clubs wherever they are, and show that '08 is a real live class. If you are away back in the woods somewhere, subscribe to the REVIEW or the *Tech*, and keep posted on what is happening at the old stand. I have only heard from a small percentage of the fellows as yet, but feel sure that as soon as each man gets settled he will let us all share the glad tidings. Wishing everybody the best of success, I am, Sincerely yours,

JOHN T. TOBIN,
Secretary of the Class of 1908.

II.

H. V. Spurr is with the Pennsylvania Steel Company at Steelton, Pa.—P. C. Brown is with J. B. Williams & Sons, belt manufacturers, Dover, N.H. On July 8 his engagement to Miss Marguerite L. Williams (Wellesley, '08) was announced.—Al. Place spent the summer in Woburn. He sends his best regards to everybody.—Roger Rice has been an assistant to Professor Robbins in surveying. He will return to the Institute in the fall.—Harry Webb has been busy on thesis. With Harry Putnam and Lynn Loomis he has been in West Milan, N.H., all summer.—"Ted" Barnes is in Syracuse, N.Y.—Joe Sando is with the Allis-Chalmers Company, Milwaukee, Wis., in the pumping engine and hydraulic turbine department.—Howard Luther will return in the fall to assist in the structural department.—Waldo York has spent a very pleasant summer down on the Cape, and will return to the 'Stute in the fall.—"Scout" Douglas was with an engineering firm in Boston the last few months.—L. H. Sutton will return in the fall as assistant in the new turbine option in Course II.—Joe Pope is with the Fore River Ship and Engine Company. His address is 556 Washington Street, Quincy.—E. R. Smith is inspector of construction on the Bedford Water Supply Works.—L. B. Hedge,

after trying a position in an Alabama coal mine, accepted a place with the General Electric Company, incandescent lamp department. Address, 6020 Jefferson Avenue, Chicago, Ill.—B. W. Cary is in the United States Patent Office, Washington, and reports that, among other Tech men there, is Gill, our former instructor in physics.—D. W. Clark is with the Board of Public Works, Andover, Mass., assisting in the installation of a high-pressure water supply.—C. C. Kinsman is with the Metropolitan West Side Elevated Railway Company, Chicago. His permanent address is 1168 Flowinoy Street.—G. Schobinger is with the Chicago Transit Commission, 181 La Salle Street, Chicago.—Ben Bullard is with the Missouri River Power Company, Canyon Ferry, Mont.—Clarence Gaylord is with the Los Angeles Edison Company, Los Angeles, Cal.—Dick Collins is with the Dolphin Jute Mills, Paterson, N.J.—H. W. Blackburn, Harry Lord, W. D. Ford, and Charlie Edmonds are with the G. F. Blake Manufacturing Company, East Cambridge, Mass.—J. M. Talbot is with the S. S. White Dental Manufacturing Company, Prince Bay, Staten Island, N.Y.—I. M. Guilford is with the Winchester Repeating Arms Company, New Haven, Conn.—F. M. Bond is to be with the Stanley Works, New Britain, Conn.—Through the kindness of Professor Locke the resident secretary is enabled to give the following information regarding Course III. men. Bonillas is in Mexico with his father.—Bradford is now making preparations to leave for Alaska.—Chipman is with the Canadian Geological Survey, British Columbia.—Christensen is engaged in mining, Dorchester, Col.—Dickinson is to be assistant to Professor Hofman, and Gibbons is to be assistant to Professor Richards.—N. S. Hammond is assistant superintendent, Great Bras d'Or Mining Company, Goldbrook, N. S.—Heimer is with the Enterprise Mining Company, Cooney, N.M.—Maxwell is with the Copper Queen Company, Bisbee, Ariz.—Penny is with the Pennsylvania Steel Company, Lebanon, Pa.—Ewing is with the Federal Lead Company, Flat River, Mo.—Fanning is with the Henry Woods Testing Plant, Denver, Col.—Frey is engaged in surveying in York, Pa.—Tse and Wen are going to take a post-graduate course at Tech this fall.—S. F. Kedy is with the Minetto Shade

Company, Minetto, N.Y.—H. C. Faxon is to be lecture assistant to Professor Cross.—J. H. Locke and H. S. Eames are also to return as assistants.—Sampson has been with the Cotton Gin Works at East Bridgewater, but intends to return to Tech in the fall for an S.M. degree.—Bowman is with the Commonwealth Edison Company, 139 Adams Street, Chicago, Ill. He says that there are many Tech men in Chicago, among them J. I. Banash, formerly instructor in the testing laboratory.—Jimmie Burch is travelling in Europe.—E. G. Genoud, with H. P. Hollnagel, '06, left September 17 for Germany. Ernie will carry on some special work, and will not try for a Ph.D. He will be located at either Berlin or Bonn.—J. S. Coye is in San Francisco.—E. F. Lyford will be in New Orleans October 1.—A. T. Hinckley and W. W. Karnan are at the State House, Boston, working on water analysis.—R. G. Wint is at present a chemist at the Watertown Arsenal, but will return in the fall as assistant to Dr. Fay.—R. E. Drake will be private assistant to Dr. Walker.—H. P. Gurney will return to Tech in the fall for special work.—J. McGowan, Jr., is with Simeon C. Keith, Jr., bio-chemical engineer, 15 Ashburton Place, Boston.—H. E. Batsford is engaged in research work with Roessler & Hasslacher Chemical Company, Niagara Falls, N.Y.—A. L. Gardner is assistant superintendent with the same concern at Perth Amboy, N.J.—Leavitt Thurlow is with the Great Western Sugar Company, Brush, Col.—Alfred B. Babcock and William H. Toppan will be assistants in theoretical chemistry.—C. W. Clark will be an assistant in technical analysis, and H. S. Chandler assistant in organic chemistry.—R. C. Folsom is with the American Sugar Refinery Company, South Boston, Mass.—R. E. Schirmer will do mining work at Columbia University.—C. Youngerman and F. B. Schmidt are draughtsmen with Tinker & Cramer, Springfield, Mass.—C. S. Clapp, Maurice Mead, and C. C. Ford are with Peabody & Stearns, Boston.—Ford, Williams, and Dolke, together with R. J. Batchelder, who is now with Coolidge & Carlson, Boston, will return to Tech in the fall.—R. G. Crane is with Parker, Thomas & Rice, Boston.—H. H. Bentley is building a house in Oskaloosa, Ia.—W. J. Pierce is with the B. & R. Rubber Company, North Brookfield, Mass.—

"Ed" Hall is with the Goodyear Rubber Company, Akron, Ohio. —R. B. Weiler will be an assistant in Mechanical Engineering.— Griswold is with the Wabash Railroad, Chicago.—Barton is with New England Telephone and Telegraph Company, Boston.—Langdon Coffin is with the Ivers & Pond Piano Company.—Monroe Ames is with the Boston Elevated Railway Company, Allston, Mass.—Flaherty and Damon are with the Charles River Basin Commission.—"Bill" Adams, J. H. Harwood, and F. A. Cole are with the United States River and Harbor Commission, Boston.— A. E. Bremer is with the Fagin Iron Works, Hoboken, N.J.— Harry Hoole is in Milwaukee, Wis., installing a cost system and piece work in a machine tool plant. He is a representative of the Miller & Franklin Company, production engineers and public accountants, Boston. Harry's address, 1420 Grand Avenue, Milwaukee.—L. A. Clark is instructor in descriptive geometry and drawing at the University of Michigan.—A. C. Nichols has gone to the Philippines.—Porosky and Everett are to return to the Institute in the fall.—John Tobin's address, care F. F. Harrington, Bridge Engineer, Virginian Railway Company, Norfolk, Va.—H. S. Osborne returns to the Institute as Saltonstall Fellow.—F. K. Belcher is with the engineering department of the Coffin Valve Company, Neponset, Mass.—Carl A. Hall writes from Berlin, Germany, that he is in a school there where everybody on entering promises not to speak a word of English for a month. His address is care of American Consul.

INDEX TO VOLUME X.

PAGE

Aleutian Islands, 1907, Journal of the Technology Expedition to the, Thomas A. Jaggar, Jr. 1
Alumni Organization, Proposed Changes in 420
Alumni Association of the M. I. T. 81, 184
Alumni Association, Thirty-third Annual Meeting of the M. I. T. . 81
Associations and Clubs 76, 180, 321
Athletics 79, 182, 323
Book Reviews 147
Burton, Alfred E., The New "Tech Union" 153
Burton, Alfred E., A Required Course in Physical Training 267
Buffalo, Technology Club of 330
Cabot Medals 318
Catalogue, The 41
Central New York, M. I. T. Club of 335
Central Pennsylvania, Technology Club of 102
Chemical Department, Some Recent Investigations in the, H. P. Talbot 405
Classes, The 70, 177
Class Secretaries, Association of 92, 326
Clubs and Associations 76, 180, 321
Commonwealth and the Institute, The, James P. Munroe 158
Convocations 70, 317
Corporation, The 41, 172, 302
Course Changes 42
Course in Mathematics, A, Woods and Bailey's 147
Dalton, Charles Henry, William Endicott 149
Department Notes 53, 172, 306
Dolke, Jr., William Fredric, Junior Week and Senior Week . . 283, 291
Endicott, William, Charles Henry Dalton 149
Engineering Education, An Important Committee on, Dugald C. Jackson 276
Exeter Student and his College, The, Maurice R. Scharff 262
Faculty, Notes Based upon the Annual Reports of the Standing Committees of the 45
Faculty Notes 305

PAGE

Faculty, The 304
Five-year Courses, A New Plan for, H. W. Tyler 270
Graduates, The 81, 184, 326, 445
Great Year for Tech, A 448
Greeley, William Roger, Mrs. Ellen H. King 260
Greeley, William Roger, The New "Tech Union" 274
Handy, Edward A., Necrology 144
Hartford, The Technology Club of 192
Holidays, The 70
Humphreys, Seth K., Technology's Club 416
Huntington Hall Panels, 1895 337
Important Plan, An 43
Institute Committee 317
Instructors' Club 44
Jackson, Dugald C., An Important Committee on Engineering Education 276
Jaggar, Jr., Thomas A., Journal of the Technology Expedition to the Aleutian Islands 1
Junior Week, William Fredric Dolke, Jr. 283
King, Mrs. Ellen H., William Roger Greeley 260
Locke, C. E., Mining Summer School 431
Lovering, Charles L. 303
Market-place for Men, A. 448
Merrimack Valley, Technology Club of 100, 191
Mining Summer School, C. E. Locke 431
Munroe, James P., The Commonwealth and the Institute 158
Necrology, Edward A. Handy 144
New Bedford, Technology Club of 105, 192, 333
News from the Classes 105, 198, 339, 450
New York, Technology Club of 98, 186, 328, 447
Northern California, Technology Club of 101, 194
North-western Association of the M. I. T. 184
Philadelphia, Technology Club of 189, 330, 446
Physical Training, A Required Course in, Alfred E. Burton 267
Pittsburg Association of the M. I. T. 193
Porter, Charles H., What will the Congress Do? 38
Professional Societies 179, 319
Publishers' Page 448
Registration, Statistics of 433

PAGE

Research Laboratory of Applied Chemistry, The New, William H. Walker 281
Reunion, All-Technology 433
Review of the Future, A 449
Richards, Robert Hallowell, Arthur Winslow 249
Ruckman, John H., Why Take the First Two Years at Tech? . . . 168
Scharff, Maurice R., The Exeter Student and his College 262
Senior Week, William Fredric Dolke, Jr. 291
Society of Arts 441
Southern California, Technology Club of 333, 445
Steam Turbine Engineering 423
Summer School of Industrial Chemistry, Frank H. Thorp 425
Talbot, H. P., Some Recent Investigations in the Chemical Department 405
"Tech," The 318
Technology Club, The 103, 195, 336
Tech Men in the Public Eye 434
"Technique, 1910," 318
Technology's Club, Seth K. Humphreys 416
Tech Show 76, 317
"Tech Union," The New, Alfred E. Burton 153
"Tech Union," The New, William Roger Greeley 274
"Tech Union," The New 399
Thorp, Frank H., Summer School of Industrial Chemistry 425
Tyler, H. W., A New Plan for Five-year Courses 270
Virginia, University of 43
Undergraduates 70, 177
Undergraduate Notes 182
Walker Memorial, Temporary 77
Walker, William H., The New Research Laboratory of Applied Chemistry 281
Washington Society of the M. I. T. 190, 331
What will the Congress Do? Charles H. Porter 38
Why Take the First Two Years at Tech? John H. Ruckman . . . 168
Winslow, Arthur, Robert Hallowell Richards 249
Woods and Bailey's A Course in Mathematics 147

Vol. X. October, 1908 No. 4.

OCT 16 1908

THE TECHNOLOGY REVIEW

A QVARTERLY MAGAZINE RELATING TO THE MASSACHVSETTS INSTITVTE OF TECHNOLOGY

PVBLISHED AT
83 NEWBVRY STREET BOSTON BY THE
ASSOCIATION OF CLASS SECRETARIES

Copyright, 1908, by Association of Class Secretaries, M. I. T.
Entered as second-class mail matter at Boston Post-office.

Price, 35 cents

The Technology Review

A QUARTERLY MAGAZINE
DEVOTED TO THE
INTERESTS OF THE
MASSACHUSETTS INSTITUTE
OF TECHNOLOGY

AND

PUBLISHED BY THE ASSOCIATION OF CLASS SECRETARIES

83 NEWBURY STREET, BOSTON

The Review aims to develop closer relations among Institute men and to stimulate their interest in the work of the College.

It is in no sense an engineering magazine, but deals broadly with the problems of Technological Education and the responsibilities of the professional man.

THE REVIEW is published during January, April, July, and October. Communications should be addressed to THE TECHNOLOGY REVIEW, 83 Newbury Street, Boston, Mass.

SUBSCRIPTION, ONE DOLLAR A YEAR
SINGLE COPIES, THIRTY-FIVE CENTS

Volumes I., III., IV., V., VI., VII., VIII., and IX., finely bound in half morocco, are ready for delivery at $2.25 each, or will be exchanged for unbound sets, provided they are in good condition, at $1.25 each. (If sent by mail, 30 cents extra.)

ALPHABETICAL LIST OF ADVERTISERS

	PAGE
Atlantic Works, The	2
Barrus, George H.	11
Cabot, Samuel	11
Chase, Harvey, & Company	12
Davis Foundry Company	2
Draper Company	Cover
Ellis, Geo. H. Co.	15
For Sale	12
Gowing, E. H.	12
Knapp, F. B.	12
Little, Arthur D.	11
Main, Charles T.	12
Mason Regulator Co.	14
Massachusetts Institute of Technology	10
Merrimac Chemical Co.	2
Metcalf & Eddy	12
Morse Twist Drill and Machine Co.	14
Richards, Ellen H.	12
Richards, Robert H.	12
Samson Cordage Works	2
Simplex Electrical Co.	4
Stone & Webster	1
Sturtevant, B. F., Company	4
Taintor, Giles	12
Tech, The	13
"Technique, 1910"	13
Technology Architectural Record, The	15
Technology Review, The	Cover
Todd, Thomas	15
Turner, E. K.	12
Walworth Manufacturing Company	3

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

BOSTON, MASS.

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY aims to give thorough instruction in *Civil, Mechanical, Chemical, Mining, Electrical,* and *Sanitary Engineering;* in *Chemistry, Electrochemistry, Architecture, Physics, Biology, Geology,* and *Naval Architecture.*

To be admitted to the Institute, the applicant must have attained the age of seventeen years, and must pass examinations in algebra, plane and solid geometry, physics, history of the United States (or ancient history), English, French, and German. Preparation in some one of a series of elective subjects is also required. A division of these examinations between different examination periods is allowed. In general, a faithful student who has passed creditably through a good high school, having two years' study of French and German, should be able to pass the Institute examinations.

Graduates of colleges, and in general all applicants presenting certificates representing work done at other colleges, are excused from the usual entrance examinations and from any subjects already satisfactorily completed. Records of the College Entrance Examination Board, which holds examinations at many points throughout the country and in Europe, are also accepted for admission to the Institute.

Instruction is given by means of lectures and recitations, in connection with appropriate work in the laboratory, drawing-room, or field. To this end extensive laboratories of chemistry, physics, biology, mining, mechanical engineering, applied mechanics, and the mechanic arts, have been thoroughly equipped, and unusual opportunities for field-work and for the examination of existing structures and industries have been secured. So far as is practicable, instruction is given personally to small sections rather than by lectures to large bodies of students.

The regular courses are of four years' duration, and lead to the degree of Bachelor of Science. In most courses the work may also be distributed over five years by students who prefer to do so. Special students are admitted to work for which they are qualified; and the degrees of Master of Science, Doctor of Philosophy, and Doctor of Engineering are given for resident study subsequent to graduation. Opportunity for research is offered in all the departmental laboratories, in the three recently established Research Laboratories of Applied Chemistry and Physical Chemistry, and in the Sanitary Research Laboratory and Sewage Experiment Station.

The tuition fee, not including breakage in the laboratories, is $250 a year. In addition, $30 to $35 per year is required for books and drawing materials.

For catalogues and information, address

ALLYNE L. MERRILL, *Secretary of the Faculty,*
491 Boylston Street, Boston.

GENERAL TESTING BUREAU FOR

Street Railways

Gas and Electric Companies

Manufacturing Corporations

Arthur D. Little

CHEMICAL EXPERT *and* ENGINEER

93 Broad Street

Boston

COAL DEPARTMENT

Power House Economy

Fuel Testing

SAMUEL CABOT

MANUFACTURING CHEMIST

Creosote Shingle Stains, Sheathing and Deafening
"Quilt," Lampblack, Brick Preservative,
Conservo Wood Preservative, Etc.

141 Milk Street Boston, Mass.

GEO. H. BARRUS, '74

EXPERT AND
CONSULTING STEAM ENGINEER

Pemberton Building
12 Pemberton Square
BOSTON

ROBERT H. RICHARDS, '68

PROFESSOR OF MINING ENGINEERING AND METALLURGY

Massachusetts Institute of Technology, Boston, Mass.

Consulting Engineer on Ore Dressing

E. H. GOWING, '77

ENGINEER

12–22 Pemberton Square, Boston, Mass.

HARVEY S. CHASE & COMPANY

PUBLIC ACCOUNTANTS AND AUDITORS

RECENT EXAMINATIONS:
City of Boston, City of Chicago, State of Ohio, City of Minneapolis, Boston Gas Companies, Manufacturing Companies, Savings Banks, Trust Companies, etc.

84 State Street, Boston
Telephone, 3660 Main

GILES TAINTOR

COUNSELLOR AT LAW

53 STATE STREET
BOSTON

E. K. TURNER, '70

CIVIL ENGINEER

53 State Street, Boston, Mass.

ELLEN H. RICHARDS, '73

SANITARY ANALYSES OF WATER SUPPLIES

Consulting Chemist on Food and Dietaries

Massachusetts Institute of Technology
BOSTON

F. B. KNAPP, S.B., '79

PRINCIPAL OF
POWDER POINT SCHOOL, P.O. Box 739
DUXBURY, MASS.

Prepares for Massachusetts Institute of Technology, College, or Business

Elementary Course in FORESTRY opened in 1908

CHAS. T. MAIN

MILL ENGINEER AND ARCHITECT

International Trust Co. Building
45 Milk Street, Boston, Mass.

LEONARD METCALF, '92 HARRISON P. EDDY

METCALF & EDDY

MEMBERS AM. SOC. C. E.

CONSULTING CIVIL ENGINEERS

14 Beacon Street, Boston, Mass.
Telephone, HAYMARKET 382

Water Supply, Sewerage, and Other Engineering Works

FOR SALE

Complete unbound file of THE TECHNOLOGY REVIEW to date in perfect condition.

H. L. W.,
1721 Candler Bldg.,
Atlanta, Ga.

THE TECH

ESTABLISHED 1881

If you intend to maintain your interest in the Institute, you should not fail to put yourself in touch with Technology doings at once. This can be done most easily by subscribing to THE TECH

EIGHTY SIX ISSUES
$1.50

Address: Circulation Manager, The Tech
Mass. Inst. of Tech.

TECHNIQUE, 1910

Massachusetts Institute of Technology
Boston, Mass.

Technique, the annual publication of the Junior Class, will appear in April, and will contain about 450 pages of deep interest to every Tech man

MAIL ORDERS SOLICITED

COPIES { **$2.40, express prepaid**
$2.00, express collect

ADDRESS: *BUSINESS MANAGER, TECHNIQUE*

Morse Twist Drill and Machine Co.

NEW BEDFORD, MASS., U.S.A.

A shop equipped with tools made by the "Morse" Company is always ready for emergencies. They comprise

ARBORS, CHUCKS, COUNTERBORES, COUNTERSINKS, CUTTERS, DIES, DRILLS, GAUGES, MACHINES, MANDRELS, MILLS, REAMERS, SCREW PLATES, SLEEVES, SOCKETS, TAPS, TAPER PINS, WRENCHES.

THE MASON REGULATOR CO.

INCORPORATED 1883

STANDARD STEAM SPECIALTIES

Reducing Valves, Damper Regulators, Pump Governors,
and Automatic Appliances of all descriptions for the regulation and control of Steam, Water, and Air Pressures.

158 SUMMER STREET, COR. FEDERAL STREET, BOSTON, MASSACHUSETTS
WORKS AT DORCHESTER LOWER MILLS, MASS.

THE TECHNOLOGY ARCHITECTURAL RECORD

DEVOTED TO

THE STUDY OF ARCHITECTURE AND TO THE WELFARE OF THE DEPARTMENT OF ARCHITECTURE OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Published Semi-annually by the M. I. T. Architectural Society

Subscription rate, One Dollar per Volume

14 BEACON STREET BOSTON, MASS.

THOMAS TODD, PRINTER

TELEPHONE 601 HAYMARKET

GEO. H. ELLIS CO., *Printers*

NO. 272 CONGRESS STREET, BOSTON, MASSACHUSETTS

ILLUSTRATING, PRINTING, AND BINDING OF MAGAZINES, BOOKS, CATALOGUES, PAMPHLETS, ALSO JOB PRINTING, LAW, RAILROAD, AND MERCANTILE WORK *Telephone, 1549 Main*

STONE & WEBSTER

CHARLES A. STONE, '88 EDWIN S. WEBSTER, '88 RUSSELL ROBB, '88
HENRY G. BRADLEE, '91

147 MILK STREET, BOSTON, MASSACHUSETTS

STONE & WEBSTER ENGINEERING CORPORATION

CONSTRUCTING ENGINEERS

DWIGHT P. ROBINSON	*President and General Manager*
HOWARD L. ROGERS	*Vice-President and Treasurer*
GEORGE O. MUHLFELD	*Construction Manager*
WILLIAM N. PATTEN	*Engineering Manager*
THORNDIKE H. ENDICOTT	*Purchasing Agent*

STONE & WEBSTER MANAGEMENT ASSOCIATION

GENERAL MANAGERS OF PUBLIC SERVICE CORPORATIONS

HENRY G. BRADLEE	*President*
FREDERICK S. PRATT	*Vice-President*
GUY E. TRIPP	*Vice-President*
CHARLES F. WALLACE	*Vice-President*
HENRY B. SAWYER	*Treasurer*

EXECUTIVE OFFICES OF

The Lowell Electric Light Corporation.
The Minneapolis General Electric Company.
The Blue Hill Street Railway Company.
The Seattle Electric Company.
Edison Electric Illuminating Company of Brockton.
Puget Sound Electric Railway.
Houghton County Electric Light Company.
Tampa Electric Company.
Columbus Electric Company.
Brockton and Plymouth Street Railway Company.
Pensacola Electric Company.
Cape Breton Electric Company, Ltd.
The Houghton County Street Railway Company.
El Paso Electric Company.
Whatcom County Railway & Light Company.
Houston Electric Company.
Jacksonville Electric Company.
Savannah Electric Company.
Fall River Gas Works Company.
Ponce Electric Company.
Dallas Electric Corporation.
Galveston Electric Company.
Paducah Traction and Light Company.
Northern Texas Electric Company.
The Key West Electric Company.
Puget Sound International Railway & Power Co.
The Electric Light & Power Co. of Abington & Rockland.
Baton Rouge Electric & Gas Co.

THE ATLANTIC WORKS

INCORPORATED 1853

BORDER, MAVERICK, AND NEW STREETS, EAST BOSTON

BUILDERS OF

Stationary... **BOILERS** and Marine

Plate and Sheet Iron Work of Every Description

STEAMSHIPS, TOW BOATS, STEAM YACHTS
AND HEAVY MACHINERY

SAMSON
SOLID BRAIDED CORD

ALL KINDS, SIZES AND COLORS

COTTON LINEN ITALIAN HEMP

SAMSON SPOT CORD. EXTRA QUALITY, GUARANTEED

WE ARE GLAD TO SEND SAMPLES AND FULL INFORMATION

SAMSON CORDAGE WORKS .·. *BOSTON, MASS.*

JAMES P. TOLMAN, '68, President. HERBERT G. PRATT, '85, Treasurer.

MERRIMAC CHEMICAL CO.

33 BROAD STREET, : : : : BOSTON, MASS.

MANUFACTURERS OF

Oil Vitriol	Sulphate of Alumina	Bisulphite of Soda
Muriatic Acid	Chloride of Alumina	Hyposulphite of Soda
Nitric Acid	Hydrate of Aluminum	Tin Crystals, etc.
Acetic Acid	Acetate of Alumina	Aqua Ammonia
Acetate of Soda	Glauber's Salt	Wood Alcohol
Alum	Sulphate of Soda	Colors

S. W. WILDER, President and Treasurer HENRY HOWARD, Vice-President

---

DAVIS FOUNDRY COMPANY

LAWRENCE, MASS.

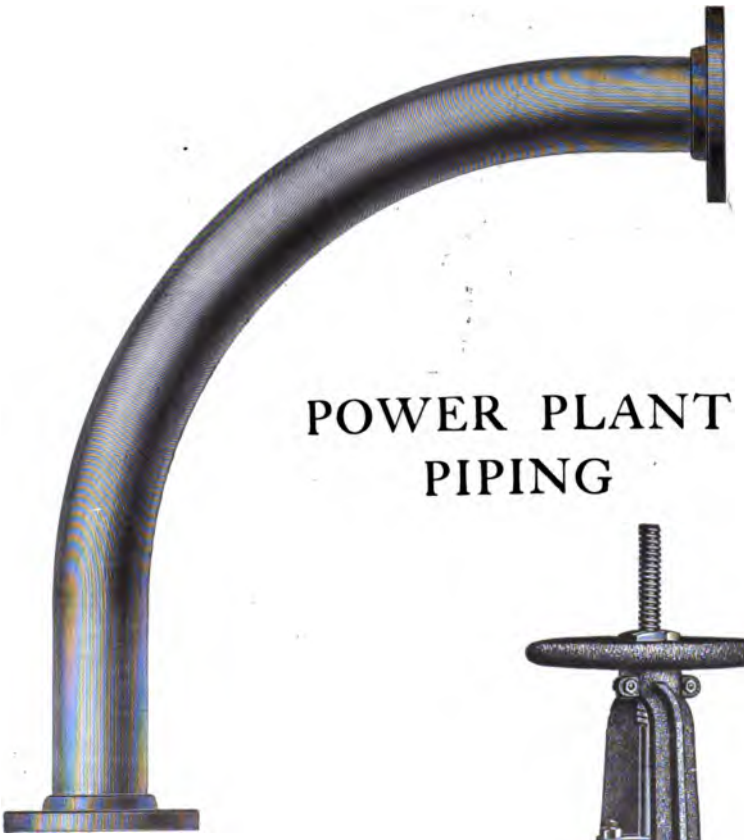
JAMES F. LANIGAN, Proprietor

Structural Iron Work of all descriptions

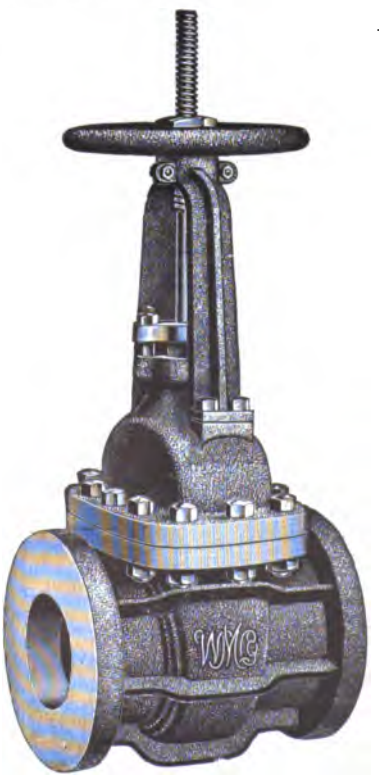
Machinery and Architectural Casting

JAMES F. LANIGAN, JR., '94, Agent

WALWORTH
MANUFACTURING COMPANY
BOSTON, U.S.A.



POWER PLANT
PIPING



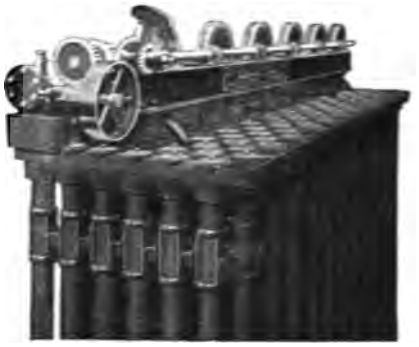
Extra Heavy
Valves and Fitting for
High Pressure Plants.

Walmanco.
Pipe Joints.

GENERAL OFFICES
132 Federal Street

SAVE FUEL—ELIMINATE SMOKE

A Sturtevant Staggered Pipe Fuel Economizer



Will earn 50 per cent. on the investment if operated but 10 hours per day.

Can be installed with a chimney or with mechanical draft apparatus.

Patented Driving Mechanism absolutely prevents scrapers sticking.

As now built, all joints are Metal-to-Metal, not a gasket.

Send for Catalog No. 150.

B. F. STURTEVANT CO., Boston, Mass.

General Office and Works, Hyde Park, Mass.

NEW YORK PHILADELPHIA CHICAGO CINCINNATI LONDON

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus: Fan Blowers and Exhausters; Rotary Blowers and Exhausters; Steam Engines, Electric Motors and Generating Sets: Pneumatic Separators, Fuel Economizers, Forges, Exhaust Heads, Steam Traps, Steam Turbines, etc. 659

SIMPLEX

INSULATED

WIRES & CABLES

RUBBER — VARNISHED CAMBRIC

Everett Morse, Pres. Charles A. Morse, Treas.
Henry A. Morse, Vice-Pres. James H. Mason, Gen. M'g'r.

THE SIMPLEX ELECTRICAL Co

110 STATE STREET BOSTON

The Technology Review

Volume X. October, 1908 Number 4

Contents

FRONTISPIECE: New Tech Union.

THE NEW TECH UNION (with cut of plan).

SOME RECENT INVESTIGATIONS IN THE CHEMICAL DEPARTMENT. . . . . H. P. TALBOT

TECHNOLOGY'S CLUB . . . . . SETH K. HUMPHREY

PROPOSED CHANGES IN ALUMNI ORGANIZATION.

STEAM TURBINE ENGINEERING.

SUMMER SCHOOL OF INDUSTRIAL CHEMISTRY, FRANK H. THORP

MINING SUMMER SCHOOL . . . . . C. E. LOCKE

ALL-TECHNOLOGY REUNION.

STATISTICS OF REGISTRATION.

TECH MEN IN THE PUBLIC EYE.

THE INSTITUTE:

Society of Arts.—Department Notes.

THE GRADUATES:

Technology Club of Southern California.—Technology Club of Philadelphia.—Technology Club of New York.

PUBLISHERS' PAGE.

A Market-place for Men.—A Great Year for Tech.—A Review of the Future.

NEWS FROM THE CLASSES.

ASSOCIATION OF CLASS SECRETARIES

OF THE

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

FREDERIC H. FAY, *Secretary* ISAAC W. LITCHFIELD, *Assistant Secretary*

Class Secretaries

ROBERT HALLOWELL RICHARDS, '68
HOWARD ADAMS CARSON . . '69
CHARLES ROBERT CROSS . . . '70
EDWARD WARREN ROLLINS . . '71
CALVIN FRANK ALLEN . . . '72
SAMUEL EVERETT TINKHAM . '73
CHARLES FRENCH READ . . . '74
EDWARD A. W. HAMMATT . . '75
JOHN RIPLEY FREEMAN . . . '76
RICHARD AUGUSTUS HALE . . '77
LINWOOD ORVILLE TOWNE . . '78
EDWIN CHILD MILLER . . . '79
GEORGE HUNT BARTON . . . '80
FRANK ELDEN CAME . . . . '81
WALTER BRADLEE SNOW . . '82
HARVEY STUART CHASE . . . '83
WILLIAM LEWIS PUFFER . . . '84
ISAAC WHITE LITCHFIELD . . '85
ARTHUR GRAHAM ROBBINS . . '86
EDWARD GALBRAITH THOMAS, '87
WILLIAM GAGE SNOW . . . '88
WILLIAM ELTON MOTT . . . '89
GEORGE L. GILMORE . . . . '90
HOWARD CARLETON FORBES . '91
WILLIAM ATKINSON JOHNSTON, '92
FREDERIC HAROLD FAY . . . '93
SAMUEL CATE PRESCOTT . . '94
CHARLES HAMILTON PARKER . '95
CHARLES E. LOCKE . . . . '96
JOHN ARTHUR COLLINS, JR. . '97
CHAS.-EDWARD AMORY WINSLOW, '98
HERVEY JUDSON SKINNER . . '99
HARRY EDMUND OSGOOD . . '00
ROBERT LONGFELLOW WILLIAMS, '01
FREDERICK HUSTON HUNTER . '02
FREDERIC ARTHUR OLMSTED . '03
REGINALD ANDREW WENTWORTH, '04
GROSVENOR DEWITT MARCY . '05
GEORGE FOSTER HOBSON . . '06
ALEXANDER MACOMBER . . '07
JOHN THEODORE TOBIN . . '08
DELOS GARRIOTT HAYNES . . '09
CURTIS CHRISTOPHER WEBB . '10
WILLSON YOUNG STAMPER, JR., '11
. . . '12

ASSOCIATION OF CLASS SECRETARIES

OF THE

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Secretaries of Alumni Associations

WALTER HUMPHREYS, '97, Secretary of the Alumni Association of the Mass. Institute of Technology.

ERNEST WOODYATT . . . . . '97
Secretary, North-western Association M.I.T.

MAURICE BIGELOW BISCOE . . '93
Secretary, Rocky Mountain Technology Club

EDMUND PARSONS MARSH . . '89
Secretary, Technology Club of the Connecticut Valley

WILLIAM HERBERT KING . . . '94
Secretary, Technology Club of New York

PERCY ETHAN TILLSON . . . '06
Secretary, Technology Club of Philadelphia

WALDSO TURNER . . . . . '05
Secretary, Pittsburg Technology Association

HENRY A. BOYD . . . . . '79
Secretary, Technology Club of Buffalo

ARTHUR CUTTS WILLARD . . '04
Secretary, Washington Society of the M.I.T.

JOSEPH WILTON ELLMS . . . '93
Secretary, The Cincinnati M.I.T. Club

JOHN ARTHUR COLLINS, JR. . '97
Secretary, Technology Club of the Merrimack Valley

CHARLES HAYWOOD STRATTON, '00
Secretary, Annapolis Society of M.I.T.

JOHN OMSBEE AMES . . . . . '93
Secretary, Technology Club of Rhode Island

CHARLES FREDERIC WING, JR., '99
Secretary, Technology Club of New Bedford

GEORGE WILLIAM BAKER . . '92
Secretary, Technology Club of Hartford, Conn.

ELBRIDGE CHURCHILL JACOBS, '97
Secretary, Vermont Technology Association

JACOB STONE, JR. . . . . '99
Secretary, Technology Club of Minnesota

SIDNEY YOUNG BALL . . . . '03
Secretary, Technology Club of Northern Ohio

FRANK WYMAN CROSBY . . . '90
Secretary, The Technology Club of the South

STEPHEN BADLAM . . . . . '00
Secretary, Technology Club of Central Pennsylvania

HOWARD COBURN BLAKE . . '06
Secretary, Technology Club of Northern California

ARTHUR BURR WHITE . . . . '00
Secretary, Technology Club of Southern California

IRVING SEWARD MERRELL . . '96
Secretary, M. I. T. Club of Central New York

JAMES EDWIN GRIFFIN . . . '06
Secretary, Inland Empire Association of the M. I. T.

Members Ex-Officiis

ALFRED EDGAR BURTON
Dean of the Institute

ALLYNE LITCHFIELD MERRILL, '85
Secretary of the Faculty

WALTER BRADLEE SNOW . . . '82
President of the Alumni Association

JAMES FLACK NORRIS
President of the Technology Club

ROBERT SEATON WILLIAMS . . '02
Secretary of the Technology Club

. . '09
President of the Institute Committee

Committee on Publication

JAMES PHINNEY MUNROE, '82 — ARTHUR AMOS NOYES, '86
WALTER BRADLEE SNOW, '82 — WALTER HUMPHREYS, '97
ISAAC WHITE LITCHFIELD, '85

We sell

COTTON MACHINERY
IMPROVEMENTS

For Spinning
Spooling
Warping
Twisting
Chain-dyeing
and Weaving

DRAPER COMPANY

Hopedale, Mass.

Joseph B. Bancroft, *President*
George A. Draper, *Treasurer*, M. I. T., '76
Eben S. Draper, *Agent*, M. I. T., '78
George Otis Draper, *Secretary*, M. I. T., '85

Among Ourselves

The prosperity of the *Review*, like that of the Institute, is in the ascendant. It is ten years old to-day.

The next (January) issue will have news of interest to all Tech men. It will be full of it.

It will go to 8,000 former students, most of whom are buyers or influence buying.

Tech sellers ought to reach Tech buyers. They can do so in these pages. Take a card or a page, for an issue or a year, and see what comes of it.

You are a buyer as well as a seller. A Tech man or a friend of Tech should have your interested consideration. Are you with us?

The Technology Review
83 Newbury Street, Boston, Mass.